Pit and Quarry

With which is consolidated CEMENT-MILL & QUARRY

Member Audit Bureau of Circulations

Read in Largest Number of Plants

Published Biweekly on Wednesday for Producers and Manufacturers of Sand, Gravel, Stone, Cement, Gypsum, Lime, and Other Non-Metallic Minerals.

Subscription price: $5 for 3 years, $2 for 1 year in the United States and possessions, North, Central and South America; elsewhere $1 additional for each year. Single copies 20c.

Entered as second-class matter October 9, 1928, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Published and copyrighted, 1930, by the

COMPLETE SERVICE PUBLISHING COMPANY
538 South Clark Street, Chicago, Illinois

H. W. BAUMGARTNER, *President* — V. E. LARSEN, *Vice-President*

S. A. PHILLIPS, *Directing Editor* — ARTHUR J. HOSKIN, *Editor*
W. E. TRAUFFER, *Assistant Editor* — G. B. MASSEY, *Associate Editor*
HARRY F. UTLEY, *Assistant Editor* — G. F. SONDRAKER, *Associate Editor*

New York Representatives:
E. M. BUCK, 68-43 Clyde St.; Telephone BOULEVARD 5259; Forest Hills, L. I., N. Y.
V. A. LESLIE, 301 W. 108th St.; Telephone ACADEMY 7990; New York, N. Y.
Cleveland Representative:
W. E. COATES, 2198 Elbur Road; Telephone BOULEVARD 0688 W; Lakewood, O.

Vol. XX — CHICAGO, AUGUST 27, 1930 — No. 11

CONTENTS

(Annual Sand and Gravel Number)

Tower System of Stock-piling Creates Interest in Aggregate Field.....35
Indiana Plant Operates Throughout the Year Despite Adverse Weather.....41
Produces 1,300 Tons of Sand and Gravel Per Shift with Five Workmen.....44
Novel Aggregate-Plant Design Permits Night Operation by Two Men.....48
Sand-and-Gravel Plant Loads Materials in Any Specified Proportions.....54
Accident-Prevention Problems Involved in Sand and Gravel Operations.....65

Men of the Industry.....67
Personal Mention.....68
Coming Events.....69
Financial News.....70
Traffic News and Comment.....71
Cement Statistics.....72
Recent Patents.....74
Legal Information for Operators.....75
Insurance Problems Discussed.....76
New Machinery and Supplies.....77
Manufacturers' Publications.....80
New Corporations.....80

Next Issue Sept. 10, 1930

Pit and Quarry

With which is consolidated CEMENT-MILL & QUARRY

Member Audit Bureau of Circulations

Read in Largest Number of Plants

Published Biweekly on Wednesday for Producers and Manufacturers of Sand, Gravel, Stone, Cement, Gypsum, Lime, and Other Non-Metallic Minerals.

Subscription price: $5 for 3 years, $2 for 1 year in the United States and possessions, North, Central and South America; elsewhere $1 additional for each year. Single copies 20c.

Entered as second-class matter October 9, 1928, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Published and copyrighted, 1930, by the

COMPLETE SERVICE PUBLISHING COMPANY
538 South Clark Street, Chicago, Illinois

H. W. BAUMGARTNER, *President* — V. E. LARSEN, *Vice-President*

S. A. PHILLIPS, *Directing Editor* — ARTHUR J. HOSKIN, *Editor*
W. E. TRAUFFER, *Assistant Editor* — G. B. MASSEY, *Associate Editor*
HARRY F. UTLEY, *Assistant Editor* — G. F. SONDRAKER, *Associate Editor*

New York Representatives:
E. M. BUCK, 68-43 Clyde St.; Telephone BOULEVARD 5259; Forest Hills, L. I., N. Y.
V. A. LESLIE, 301 W. 108th St.; Telephone ACADEMY 7990; New York, N. Y.
Cleveland Representative:
W. E. COATES, 2198 Elbur Road; Telephone BOULEVARD 0688 W; Lakewood, O.

Vol. XX — CHICAGO, AUGUST 27, 1930 — No. 11

CONTENTS

(Annual Sand and Gravel Number)

Tower System of Stock-piling Creates Interest in Aggregate Field.....35
Indiana Plant Operates Throughout the Year Despite Adverse Weather.....41
Produces 1,300 Tons of Sand and Gravel Per Shift with Five Workmen.....44
Novel Aggregate-Plant Design Permits Night Operation by Two Men.....48
Sand-and-Gravel Plant Loads Materials in Any Specified Proportions.....54
Accident-Prevention Problems Involved in Sand and Gravel Operations.....65

Men of the Industry.....67
Personal Mention.....68
Coming Events.....69
Financial News.....70
Traffic News and Comment.....71
Cement Statistics.....72
Recent Patents.....74
Legal Information for Operators.....75
Insurance Problems Discussed.....76
New Machinery and Supplies.....77
Manufacturers' Publications.....80
New Corporations.....80

Next Issue Sept. 10, 1930

Pit and Quarry
With which is consolidated CEMENT-MILL & QUARRY
Member Audit Bureau of Circulations
Read in Largest Number of Plants

Vol. XX CHICAGO, AUGUST 27, 1930 No. 11

To Hold Midwest Power Conference in Chicago

COMMITTEE PREPARES PROGRAM

Twenty representatives of the foremost engineering societies in the power field met recently in Chicago to outline plans and arrangements for the Fifth Midwest Power Engineering Conference. Past meetings of the Conference have been held in Chicago since 1925 and the next meeting promises to be of greater importance than any preceding it.

The work of carrying on the four-day meeting, scheduled for Feb. 10-13, 1931, inclusive, at Chicago will be in the hands of the following officers recently elected: President, H. W. Fuller, of Byllesby Engineering & Management Corp.; vice-presidents: C. C. Whittier, Chicago; W. M. White, Milwaukee, Wis.; Charles S. Gladden, Detroit, Mich.; Paul Doty, St. Paul, Minn.; John Hunter, St. Louis, Mo.; and Prof. A. C. Willard, Urbana, Ill.; secretary, G. E. Pfisterer; treasurer, K. A. Auty. Headquarters have been established at 308 W. Washington St., Chicago, Ill.

The conference will be sponsored by the local sections and regional divisions of the following: American Institute of Electrical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Mining Engineers, American Society of Refrigerating Engineers, National Safety Council, National Electric Light Association, and Western Society of Engineers.

Several committees have already started work for the meeting and a canvass is being made to secure the latest ideas and most modern applications of power and its allied subjects. The rapid progress in this field, and in the field of physics so closely allied, will allow a presentation of subjects of national interest. Leading authorities in the heating, refrigerating, mining, electrical and mechanical fields will be asked for expressions of the progress of power application in these fields, thereby giving a comprehensive survey of generation, distribution and utilization in a large way.

The real purpose of the power conference is to coordinate the various problems in the power field so as to give a broader understanding of applications in many different fields of use. The part of power in our daily life and in special work will find expression in the diversified papers contemplated. Original papers are being arranged with ample opportunity for discussion by leading authorities. The power engineer will find this conference the most outstanding of its kind ever held in this country.

Fuller's Earth Deposit Discovered in Montana

An immense deposit of fuller's earth at a point 21 mi. northeast of Anaconda is reported by the Lincoln Mining Co., which is composed of Butte and Anaconda residents.

It is stated by officers of this company that assays of the mineral run 98 per cent pure and that the veins converge 200 ft. below the surface to form a mountain of solid fuller's earth now known as Mud Mountain.

It is believed that this strike will give the state of Montana control of the world's output of fuller's earth. The clay is soft and granular and over 150,000 tons have already been blocked out.

Much Cement Needed by Carolina Roadways

Southern manufacturers have sold 1,100,000 bbl. of Portland cement to the South Carolina Highway Department.

The major portion of the delivery is to be made, it is said, in the Birmingham district by the Lone Star Cement Co., the Lehigh Portland Cement Co., the Coosa Co. and others.

Cement from California For Boulder Dam Project

MILLS WILL EMPLOY 2,000 MEN

The Boulder dam and Colorado River projects afford the opportunity to California cement plants to furnish the major portion of the Portland cement required for these two giant conservation projects. The quantity required, it is said, will be in the neighborhood of 10,000,000 bbl.

Roy H. Mack, secretary of the San Bernardino city and county chambers of commerce, asserts that the cement plants of the district will be provided with an ample market for capacity output during the construction of the dam and aqueduct.

Capacity production will insure employment to 2,000 or more workmen who will naturally expend their salaries in the district, thereby stimulating trade and industrial prosperity in the region.

The cement plants affected will be the California Portland Cement Co., the Riverside Portland Cement Co. and the Southwestern Portland Cement Co., all of which are located at relatively short distances from the projects.

Aside from the Boulder dam the magnitude of the aqueduct itself can be appreciated from the following figures: the aqueduct will provide the equivalent of a river 50 ft. wide, 3 ft. deep and carrying 75,000 in. of water past a given point at the rate of 10 ft. per sec., according to Mr. Mack.

Indiana Producer Leases New Aggregate Deposits

The Myers Gravel Co. of Anderson, Ind., has taken a lease on gravel deposits on the Pittsford farm east of that city, for future gravel washing operations. The company now operates a large pit at the south edge of the city near the Big Four yards.

Permits for July Show About 2 Per Cent Gain

BETTER CONDITIONS SEEN

Some improvement in the building situation throughout the United States was noted during the month of July, according to official reports of building permits issued in 589 leading cities and towns as compiled by S. W. Straus & Co. The volume of prospective construction planned during July, the permit figures show, was $187,570,714, compared with $184,665,439 in June, a gain of a little less than 2 per cent. Normally there is a decline of not quite 13 per cent between the two months. However, building generally is still below normal, as is shown by a comparison of July, 1930, with July, 1929. July this year declined 36 per cent from the $292,912,550 volume of permits issued in the same month last year.

Although building permits recorded only the slight increase of 1.6 per cent in July over the preceding month, figures based on the period from 1923 to 1929 indicate an expectancy of a seasonal decline of almost 13 per cent between these two months. Taking into consideration both the above-mentioned seasonal factor and the long-term trend which, in building permits, has been downward since about the middle of 1926 and precipitately so in the last few years, the Straus index of building permits is found to be 13.1 per cent below normal as compared with a June index 21.8 per cent below normal and a July, 1929, index almost 3 per cent above normal.

It is worthy of note, however, that these reports bring assurance of increasingly sounder conditions in the field of improved real estate. The slackened pace in building operations is effecting a reduction of surplus space wherever it may happen to exist as the result of the more intensive activities of prior years. The recently announced Federal census reports showing an increase of about 17,000,000 in the population of the Continental United States, with heavy gains in substantially all our leading cities, is one of many indices which make clear the fact that the necessity for building in America is constant. With a continued reduction in building construction, therefore, fundamental conditions in the improved real estate market must inevitably be gaining strength with every passing month.

The first twenty-five cities in point of volume of projected building showed a collective gain of 27 per cent over June, but declined 25 per cent from July, 1929, and 38 per cent from July, 1928. Nineteen of the cities, all except Detroit, Philadelphia, Baltimore, St. Louis, Seattle and St. Paul, gained over June. Twelve of the cities gained over July, 1929—namely, Milwaukee, Cincinnati, Kansas City, Providence, Houston, New Orleans, Worcester, Pasadena, Jersey City, Dallas, St. Paul, and Denver. Twelve cities, Milwaukee, Cincinnati, Kansas City, Providence, New Orleans, Worcester, Pasadena, Oklahoma City, Jersey City, Dallas, St. Paul and Denver, gained over July, 1928.

Chicago took second place in the ranking, displacing Los Angeles. Milwaukee was fourth, Detroit fifth, and Cincinnati sixth, followed by Philadelphia, Boston, Baltimore, and Washington in the order named. Six cities, not represented among the twenty-five leaders for June, appeared on the list for July—Providence, New Orleans, Worcester, Pasadena, Dallas, and Denver.

Local Contractors Have Meeting at Grand Rapids

The local cement contractors of Grand Rapids, Mich., met at the Y. M. C. A. building on August 15 to consider problems in relation to the market. L. L. Griffith, representing the Portland Cement Assn., was the principal speaker.

Southwest Will Repeat Its Road Show and School

MACHINERY EXHIBIT ENLARGED

An educational program will be conducted during the Sixth Annual Southwest Road Show and School which will be held Jan. 24 to 27, 1931, in the Exposition Building, at Wichita, Kan. This program will be under the supervision of the Kansas State Highway Commission and the Kansas State Agricultural College, in cooperation with the highway commissions of the Southwest states, the U. S. Bureau of Public Roads, and various colleges and universities.

This feature has attracted the attention of the entire Southwest to the extent that nine states surrounding the Show and School, not including the colleges and universities, had exhibits at the last School and required more than 16,000 sq. ft. of space for the educational exhibits alone. Already, many have signified their intentions of exhibiting at the 1931 Exposition.

Additional floor space has been added to take care of the machinery, equipment, accessories, and material exhibits, which last year taxed the exhibit space to its limit. F. G. Wieland, manager, anticipates that the interested attendance will exceed 25,000 at this Exposition as it has had an exceptionally rapid growth.

Equipment Corporation Opens New Division

A department to serve the crushed stone and gravel industry is announced by H. M. Capron, president of the Equipment Corp. of America. This department is in charge of C. B. Watrous, formerly with Nordberg Mfg. Co. and Marion Steam Shovel Co. The large stock of rebuilt equipment will be increased by the addition of all sizes of crushers and a broader line of large shovels. This corporation is in the market for all kinds of modern used equipment.

BUILDING AND ALTERATION PERMITS FOR JULY, 1930, COMPARED WITH JULY, 1929, AND JUNE, 1930, BY STATES

State	July, 1930	July, 1929	June, 1930		July, 1930	July, 1929	June, 1930
Alabama	$ 541,677	$ 842,911	$ 707,499	Nebraska	$ 315,567	$ 848,353	$ 764,240
Arizona	528,083	832,884	475,744	Nevada	105,450	150,900	101,800
Arkansas	156,405	284,712	207,562	New Hampshire	60,587	122,724	55,950
California	16,139,170	23,911,525	17,391,109	New Jersey	6,977,002	11,482,239	8,060,642
Colorado	1,351,535	1,184,919	1,359,574	New Mexico	84,248	142,300	86,976
Connecticut	3,334,483	7,133,812	5,266,896	New York	64,162,860	70,700,605	43,075,708
Delaware	295,310	510,998	261,935	North Carolina	711,202	1,822,882	1,160.728
District of Columbia	2,356,570	5,127,815	1,613,055	North Dakota	159,879	463,748	419,438
Florida	1,955,920	3,377,005	1,727,135	Ohio	8,103,791	16,231,209	12,059,780
Georgia	1,116,405	1,497,559	851,196	Oklahoma	2,676,893	4,446,104	3,845,218
Idaho	124,137	263,876	49,234	Oregon	826,588	2,283,752	1,256,269
Illinois	11,585,589	22,763,755	9,519,395	Pennsylvania	6,800,761	28,432,350	17,734,645
Indiana	2,131.230	10,267,612	3,086,975	Rhode Island	2,472,288	1,481,945	1,169,120
Iowa	1,929,013	3,737,686	2,380,474	South Carolina	264,372	377,115	558,955
Kansas	684,265	1,061,936	1,048,140	South Dakota	240,250	281,920	497,476
Kentucky	588,240	1,394,808	1,191,306	Tennessee	1,398,771	2,178,098	1,785.319
Louisiana	3,289,917	2,071,436	684,321	Texas	5,357,608	7,126,786	4,712,648
Maine	86,939	459,354	172,937	Utah	347,775	372,595	592,965
Maryland	2,640,856	3,192,540	3,187,878	Vermont			
Massachusetts	9,144,280	14,039,281	8,120,763	Virginia	1,871,618	1,154,578	833,967
Michigan	6,583,192	19,454,360	7,491,305	Washington	2,711,939	2,504,974	2,718,732
Minnesota	3,330,701	2,664,526	5,457,389	West Virginia	383,642	736,551	377,742
Mississippi	206,901	730,681	327,618	Wisconsin	7,083,402	8,622,165	6,813,490
Missouri	4,012,950	3,678,476	3,192.586	Wyoming	212,033	145,380	44,230
Montana	128,420	318,810	167,375	Totals	$188,552,565	$292,912,550	$184,665,439

Ohio Dragline Plant Goes into Production

DEPOSIT ON STILLWATER RIVER

A recently-completed gravel plant equipped for the dragline excavation of material from a river-bed is now in operation about twenty miles northwest of Dayton, O., on U. S. Highway 48, leading from that city to Covington. The plant is operated by Walter J. Steiner, of Laura, O., and a 20-acre tract lying along the banks of the Stillwater River is being worked.

It is intended to excavate the gravel composing the banks of the river sometime in the future but, at present, the material is taken from the river-bed proper. The span between the two towers is now about 600 ft., but it will be increased later to some 800 ft., when bank excavation is decided upon.

The slackline cableway is equipped with a 1-cu. yd. back dump bucket, operated by a Type LJ, two-speed electric hoist, equipped with a General Electric slip-ring motor.

The head-mast is about 90 ft. in height. To this is slung a triple-sheave tension block to provide for the track-cable, while two single-sheave lead-blocks are provided for the load-cable operation. A safety ladder and platform are provided so that the operator can oil all the sheaves in the blocks and carriage with perfect security. This equipment was manufactured by Street Bros. Machine Works, Chattanooga, Tenn., who aided in the installation.

The material brought up with the bucket to the top of the bins is dumped through a steel grizzly having a bar spacing of 6 in., into a steel hopper. The through material discharges through a sliding gate to a Deister Plat-O triple-deck vibrating screen driven by an Allis-Chalmers Texrope drive and is separated into three sizes. All of the oversize from the grizzly and the screen goes to a Williams hammer-crusher located on top of the bins and, after being ground, is returned to the screens by a bucket elevator. The material passing through the bottom screen goes into a Telsmith cone-type settling tank.

The three sizes of gravel prepared conform to the specifications of the county highway department, the output of the plant being used principally for road building in Preble County where the plant is located.

A 4-in. Fairbanks-Morse centrifugal pump driven by a direct-connected electric motor is provided for washing the material, the water being pumped from the Stillwater River.

The gravel is stored in four Neff & Fry concrete silos provided with segment gates for truck loading.

The dragline mast and the grizzly above the crushing-and-screening house on top of the silos.

Dragline bucket emerging with a full load of gravel.

Speeder Machinery Corp. Expands Sales Division

The Speeder Machinery Corp., Cedar Rapids, Ia., manufacturers of gasoline, electric, and Diesel powered shovels, cranes, and draglines, has recently increased its extensive sales organization throughout the United States and Canada.

R. F. Sanchez is export manager with offices at 50 Church Street, New York, N. Y. B. C. Larrabee is district sales engineer with headquarters at Seattle, Wash. Harry E. Zabel is district sales engineer with headquarters at St. Paul, Minn. W. A. Avery is district sales engineer with headquarters at Chicago, Ill. R. C. Higley is district sales engineer with headquarters at Dallas, Tex. A. D. Lane, formerly district sales engineer with headquarters at St. Paul, has been transferred to the central Southwest territory with headquarters at Kansas City, Mo.

Shovel and 4 Trucks Handle Big Yardage

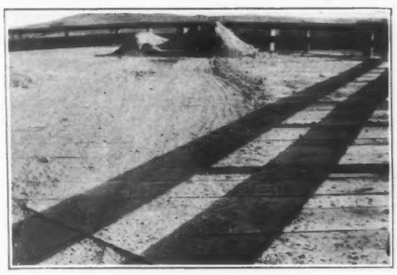
AVERAGE 1,200 CU. YD. PER DAY

A simple layout was employed by Jos. Colianni & Bros. Co. of Minneapolis, Minn., at one of its operations in Nebraska.

Trucks and gasoline shovel at the face of the pit.

A long semi-circular face was excavated in a gravel pit of comparatively uniform quality. The face varied from about 20 ft. up to 50 ft. in height. The excavating equipment consisted of a Loraine 75 1¼ cu. yd. gasoline shovel which loaded the gravel into four motor trucks. The loaded trucks traveled from 500 ft. to 600 ft. to a platform alongside and above a railroad siding. One-way travel enabled the drivers of the trucks to move continually without interference or delays, and to handle 105,000 cu. yd. of gravel in 87 working days.

Through a chute in the planked platform, the gravel descended directly into the gondola cars beneath.



Platform where trucks were unloaded and railroad cars loaded.

Gravel Company Planning Location in Chattanooga

That the Loudon Sand & Gravel Co. of Loudon, Tenn., will be moved to Chattanooga in the near future is reported in the *Chattanooga News*.

S. P. Dannel, president of the Loudon company, was in Chattanooga recently to inspect a number of sites proposed for the location of his company.

In the event the company moves to Chattanooga it will be expanded, it is said, and the present capitalization of $50,000 will be increased.

Highway Fund Allotted For Employment Relief

WILL ASSIST DROUGHT RELIEF

On Aug. 16, Secretary of Agriculture Hyde authorized the apportionment of the Federal funds for highway improvement in the fiscal year ending June 20, 1932. This will make it possible for the states to anticipate the Federal funds which will be paid to them next July and will enable them to expand and advance their highway programs at once and so provide emergency employment for a considerable number of men who might otherwise be destitute as the result of crop failures.

Congress has appropriated $125,000,000 for the fiscal year which will begin July 1, 1931. After deduction of the 2½ per cent allowed for administrative expense, Secretary Hyde was able to allot $121,875,000 to the several states and to Hawaii. Because drought conditions are confined to only part of the states, and a balance of previous allotments remains unobligated to the credit of several of the states, the Secretary will use his discretion as to the approval of projects and will expedite the approval of projects complying with the following conditions:

1. That the state has obligated and has under construction all or practically all of the Federal aid funds previously allotted.

2. That state funds be required for each project in an amount sufficient to meet the Federal-aid funds on the legally established basis. This would not exclude the voluntary contribution of additional county or local funds but would require the state itself to provide a minimum amount equal to the Federal pro-rate required, basically fifty per cent Federal funds.

3. That the state highway department submit with each project statement a reasonable showing that the project, if expedited, would assist in providing employment in the drought areas or would directly contribute to the relief of unemployment in a substantial way. The authority for exercise of administrative discretion in the approval of projects is found in various sections of the Federal highway legislation.

Although the emergency road work is expected to be done in only those states that are suffering from unemployment and from the drought, the apportionment for all the states has been made.

Road Funds by States

State	Sum apportioned	State	Sum apportioned
Alabama	$2,615,434	Nebraska	$2,644,726
Arizona	1,768,023	Nevada	1,598,987
Arkansas	2,174,786	New Hampshire	609,375
California	4,181,212	New Jersey	1,565,749
Colorado	2,315,948	NewMexico	1,984,363
Connecticut	792,359	New York	6,002,475
Delaware	609,375	N. Carolina	2,871,722
Florida	1,543,232	N. Dakota	2,001,841
Georgia	3,316,029	Ohio	4,584,440
Hawaii	609,375	Oklahoma	2,922,569
Idaho	1,554,594	Oregon	1,997,569
Illinois	5,150,396	Pennsylvania	5,517,738
Indiana	3,172,253	Rhode Island	609,375
Iowa	3,330,593	S. Carolina	1,769,848
Kansas	3,397,874	S. Dakota	2,054,077
Kentucky	2,356,367	Tennessee	2,687,123
Louisiana	1,745,445	Texas	7,620,239
Maine	1,121,860	Utah	1,416,493
Maryland	1,051,714	Vermont	609,375
Massachusetts	1,813,916	Virginia	2,379,788
Michigan	3,652,393	Washington	1,940,922
Minnesota	3,497,306	W. Virginia	1,324,680
Mississippi	2,209,509	Wisconsin	3,075,234
Missouri	3,957,287	Wyoming	1,568,607
Montana	2,580,405	Total	$121,875,000

Illinois Plant Buys New Materials Handling Units

The Metropolis Sand & Gravel Co., Metropolis, Ill., recently made some changes in its plant to increase production and improve the quality and number of sizes of material produced. The gravel is dredged from the Ohio River by suction dredges and unloaded from barges to the shore plant by a stiff-leg derrick.

The additions were a McMyler gasoline crane handling a ½-cu.-yd. Brownhoist clamshell bucket, and a Gruendler 3-ft. by 12-ft. single-jacketed revolving screen. The plant capacity is now about 50 tons per hour. With the exception of the crane it is entirely electrically operated.

Report France Stone Co. May Buy Kennedy Plant

According to reports current within the industry, the France Stone Co. of Toledo, O., is negotiating for the purchase of the Bettsville, O., plant of the Kennedy Refractories Co. The France company will utilize the plant for the manufacture of hydrated lime, it is reported.

Monument Dedicated at Vulcanite Plant

NO ACCIDENTS IN 22 MONTHS

The trophy awarded to the Vulcanite Portland Cement Co. by the Portland Cement Association for having no lost-time accidents during the year 1929 was dedicated on July 29 at the company's plant, Vulcanite, N. J., with appropriate exercises. The Vulcanite company has had a remarkable record in regard to accidents for, beginning with February, 1928, to December 31, 1929, a total of 22 months, the plant was free from lost-time accidents.

The meeting was called to order by S. H. Harrison, assistant superintendent of the plant, and a member of the company's safety committee.

Rev. Andrew Szabo, pastor of the Presbyterian church, offered prayer, and "America" was played by the S. I. M. Boys' Band of Alpha, N. J.

The trophy was then presented to the Vulcanite company by J. B. John, vice-president of the Portland Cement Association.

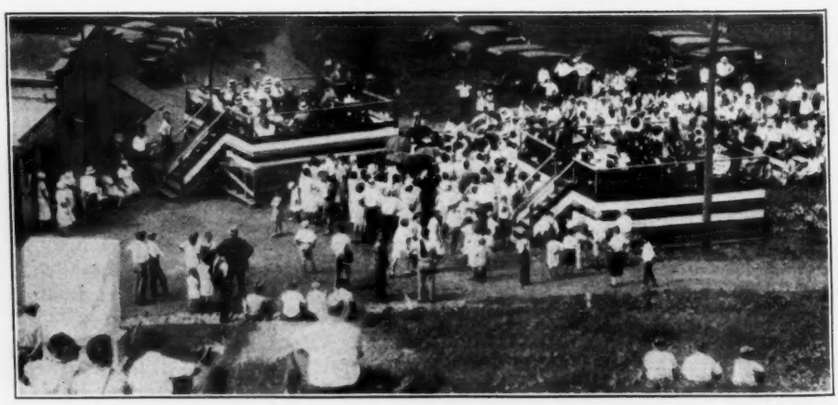
Mr. John is president of the Medusa Portland Cement Co., Cleveland, O., and is chairman of the accident-prevention committee of the Association.

The trophy was unveiled by Misses Elizabeth Sido and Anna Briglia, children of Vulcanite employees. The speech accepting the trophy was made by Cleveland M. Rhen, of the safety committee, Vulcanite Portland Cement Co.

Addresses were also made by W. D. Lober, Philadelphia, president of the Vulcanite Portland Cement Co., and Hon. John Roach, of Trenton, deputy commissioner of labor, state of New Jersey.

Toledo Builders' Supply Companies Consolidate

The Kuhlman Builders Supply & Brick Co., Toledo, O., has purchased all of the tangible property of the Acme Coal & Builders Supply Co.



Ceremonies attending dedication of safety trophy won by Vulcanite Portland Cement Co.

Road Paving Exemplified For the Traveling Public

MACHINERY MODELS EXHIBITED

There is being held in Atlantic City, N. J., July 17 to Aug. 28, an exposition known as the American Fair. This exposition is in the Auditorium, where the 1930 Road Show and Convention of the American Road Builders' Association was staged. The officials of the Atlantic City Auditorium sponsored this exposition with the idea that this is the season when the largest number of visitors are in the city.

The American Road Builders' Assn. has a booth representing the highway industry. This exhibit is educational, showing pictorially and graphically the many phases of road building. Standard signs and markers, highway finance, highway expenditures, development of transportation and other items of interest are shown by means of photographs, charts, models and maps. Models of the various types of paving show the construction of each, as well as culverts, bridges and similar structures. These exhibits were obtained through the cooperation of the Bureau of Public Roads.

The manufacturer members of the Association have furnished models of their equipment and materials. Miniature blade graders, cranes, instruments, maintainers, rollers, scarifiers, spreaders, trucks, tractors, testing apparatus, as well as materials and accessories are on exhibit. Millions of people who daily travel over the highways of this country do not have the slightest conception of the materials, methods and equipment used in the construction and maintenance of our roads and bridges. This exhibit gives them an opportunity to get this information clearly and concisely.

The figures released by the Auditorium management for the period from July 17 to August 7 showed an average daily attendance of 23,584. The Association is distributing reprints from the proceedings of past conventions and literature from the various manufacturers who have furnished models for the exhibit. P. F. Seward, assistant engineer of the American Road Builders' Assn., is in charge of the booth.

Catalog Covers Machinery For Handling All Materials

The entire line of Barber-Greene materials handling machinery has been put into a single book, "The Barber-Greene Line," a 32-p. catalogue, handsomely printed and covered in black. A page devoted to each machine contains a large posed photograph, a brief description, and general specifications and features.

The review of machines begins with conveyors: the permanent belt conveyor, the portable conveyor, the shuttle conveyor, the belt feeder, the box-car loader, and the small, light-type U conveyor.

The catalogue describes the four types of Barber-Greene bucket loaders which range in size from the big Model 62 to the small Model 28 and are, with the exception of the latter machine, crawler-mounted. The Model 28 is on wheels. A page is devoted to the combination of the Model 42 loader and a power-vibrated screen for loading and screening sand, gravel and coke.

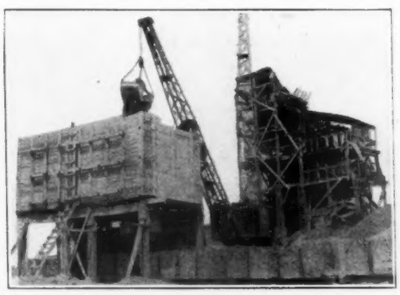
Five vertical-boom ditchers are described: the standard 8-ft. 3-in. ditcher, the pipe-line special, the light utility ditcher with off-set vertical boom, the curb and gutter ditcher, and the conduit special. All of these ditchers are crawler-mounted.

Machines for coal handling are the coal loader, the lighter crawler-mounted flight conveyor, the power-propelled flight conveyor, and the life-time flight conveyor.

Copies of "The Barber-Greene Line" are available upon request to the manufacturer.

Road Contractor Utilizes Crane Advantageously

To provide sand and gravel for the construction of several miles of highway in the vicinity of Albany, Ind., the Brown-Rosenbarger Gravel Co. has erected a plant which, although for temporary use, is as well constructed and equipped as many permanent plants.



Crane in action.

Sand and gravel are dug from a pit and delivered to the plant by a cableway. After being washed and screened the separate grades are stocked in open piles from which a Lima 101 crane with a clamshell bucket transfers sand and gravel, as desired, to a concrete-mixing structure that is built over a narrow-gauge railway. The prepared concrete is hauled on this track which is laid along the highway right-of-way.

Illinois Gravel Plant Discontinues Operation

The gravel plant of the Peoria Builders Supply Co., located at the north end of Second street, Chillicothe, Ill., has ceased to operate, according to press reports. The machinery and equipment have been moved away.

Foundry Will Produce Acid-Resistant Alloys

RESISTS HYDROCHLORIC ACID

Haynes Stellite Co., Kokomo, Ind., a unit of Union Carbide and Carbon Corp., has announced the completion of a new foundry at the Kokomo works, built expressly for the manufacture of the Hastelloys, a new group of acid-resistant alloys. The most up-to-date and efficient foundry equipment procurable has been installed to insure careful control of quality and uniformity of product. The Hastelloys form a group of alloys with unique properties. They are of particular interest to chemical engineers, and others who have been faced with the hitherto difficult problem of providing suitable equipment for resisting the action of hydrochloric acid and moist chlorine. Hastelloy A is the only alloy, available commercially, which resists the action of both hot and cold hydrochloric acid, while Hastelloy C resists the action of wet chlorine.

The production of these alloys, facilitated by the opening of this new foundry, will be of interest not only to the chemical and process industries but to all other industries in which the handling of acids is a problem. Information may be obtained from the various offices of the Haynes Stellite Co. or by writing to the general offices in Kokomo, Ind.

Quarry Company Gives Lime to Agriculturists

C. C. Beam, Inc., of Melvin, O., is offering gratis several thousand tons of fine quality agricultural limestone to the farmers in the district. In a letter to a local newspaper, the Washington Herald, the president of the company, C. C. Beam, calls attention to the value of limestone to agriculture and invites the farmers to come to the plant and haul it away. As the use of limestone on acid soils will increase crop production from 20 per cent to 100 per cent, this action on the part of the Beam quarries is certainly very commendable.

Gravel Dredge Company Employs Various Pumps

According to information received from the Koenig Coal & Supply Co., whose plant A, at Oxford, Mich., was described in the May 21 issue of PIT AND QUARRY, the pumps used in dredging are a 15-in. Amsco, the main unit on the dredge, with a 6-in. priming unit. On the booster, the main unit is a 15-in. Morris pump, with a 3-in. Morris pump for priming. All other water pumps at this plant are of Allis-Chalmers make.

When the washed sand leaves the dewaterizer in the shore plant it is conveyed by a belt to a flume and thence is washed down through valves into the bins.

Efficient Ground Storage Allows Steady Shipment

SPACE ECONOMY IS FEATURE

Up-to-date producers of sand and gravel are rapidly adopting ground storage as a relief valve for excess material that cannot be shipped as fast as it is produced. Ground storage permits a plant to be operated at a more uniform rate from day to day with resulting economies in operating cost and the elimination of many worries connected with plant labor. The trouble with many ground storages is that they are not well conceived from an engineering and operating standpoint and consequently fail to achieve a high degree of efficiency in operation.

The American Aggregates Corp. of Greenville, O., has recently installed at its Fort Jefferson, O., plant a ground storage that is an outstanding example of good design. The arrangement is simple and involves no unusual equipment. Its effectiveness results mainly from the careful study that was given it in order that the various units should be in the proper relation to each other to insure the most efficient operation.

The gravel comes from the screening and washing plant to the storage ground on a belt conveyor supported on a trestle, the discharge end of the conveyor being 35 ft. above ground. The initial conical pile deposited by the conveyor can therefore be about 35 ft. high and can eventually form one end of a semi-circular stockpile having a maximum height of 40 ft. This initial pile affords excellent digging conditions for the clamshell bucket by means of which the gravel is delivered to a truck-loading bin, to gondola cars on a siding, or to the main stockpile.

The principal mechanical feature of the installation is an electrically operated Model 60 Wiley Whirley with a 50-ft. boom, capable of handling a 1½-cu. yd. clamshell bucket, or a total load of 12,000 lb., at a radius of 50 ft. from the center of the machine rotation. The Whirley is mounted on a concrete pier 15 ft. high, located so that the arc described by the bucket on a 50-ft. radius from the center of rotation (which is equivalent to about a 30-deg. boom angle) crosses the center of the initial pile and the bin hoppers, is tangent to the center-line of the siding, and coincides with the ridge of the stock-pile. Due to this intelligent layout, the major part of all handling operations can be accomplished without the necessity of booming up and down, thus conserving time and increasing the handling capacity per unit of time.

The swing between the initial pile and the siding loading point is about 90 deg. and that between the initial pile and the bin hoppers about 30 deg., so that high capacity may be realized by minimizing these distances. The stockpile occupies about 180 deg. of the circle, will be 40 ft. high and will contain, when full, approximately 15,000 cu. yd., or 20,000 tons. The stock pile on its outer side will rest against a bank cut into a hill on a 45-deg. slope, so that, as the material is reclaimed, it will slide to the foot of the slope where all of it can be reached by the bucket on its normal 50-ft. radius.

This is a most compact and efficient storage, because it is contained in a ground area of about 125 by 150 ft., and about 80 per cent of it can be reclaimed on the 50-ft. radius.

The hoisting speed of the Wiley Whirley is 200 ft. per min. and the swinging speed is 2½ r.p.m. On a 90-deg. swing, under steady operation, the machine can make about 100 cycles per hour, which, with an average 1½-cu. yd. load, is equivalent to 150 cu. yd. per hour. Allowing for the usual operating delays, its normal handling capacity on a 90-deg. swing is around 120 cu. yd. per hour.

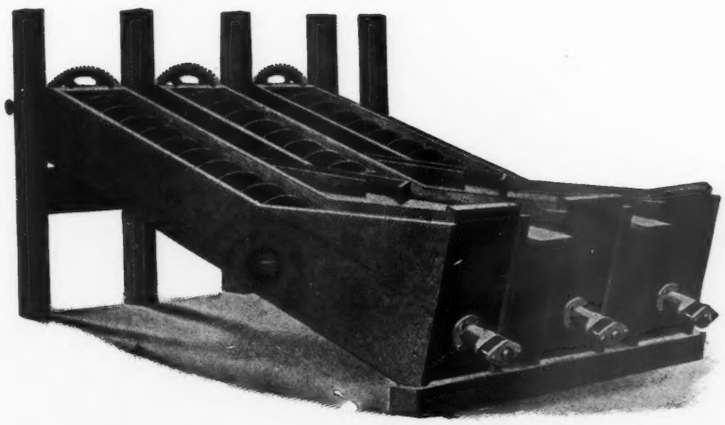
Old Mica Mine Electrified For Revival of Production

Edgar Fraley of Norton, Va., and A. E. Heighway of Washington, D. C., have secured a 10-yr. lease from M. L. Wilson of Bakersville, N. C., on the Hawk mica property, near Hawk, N. C. This mine was opened up many years ago and, for a time, produced the largest books of No. 1 mica in this country. The new lessees plan to install electric-driven equipment and to start the production of both mica and feldspar.

This crane with its 1½-cu. yd. bucket handles 150 cu. yd. per hr. on a 50-ft. radius.

Pit and Quarry
With which is consolidated
CEMENT-MILL & QUARRY
ANNUAL SAND AND GRAVEL SECTION

60 Lewistown Sand Washers Installed *by* One Customer.



THEY come back for more! Once Lewistown Washers are installed the additions are Lewistowns, too.

All Lewistown Washers are shipped with the understanding that if they do not do your work satisfactorily, you can return them to us for full credit. There are more Lewistown Washers in use than all other makes combined. If you have a Washer problem, let us help you to solve it. Why ship a dirty product when you can clean it at a very little cost?

Not only does performance say—Buy Lewistowns—but their low price says it just as emphatically. Worth your investigation. Write today.

Lewistown Fdy. & Machine Co.

Lewistown, Penn.

THE WILEY WHIRLEY

A traveling, revolving, long reach, heavy duty steel derrick—the ideal machine in sand and gravel plants for excavating in the pit, loading and unloading cars and barges, delivering to hoppers or stock piling.

Six models with booms from 50 to 100 feet. Booms "live" with range from horizontal to 80 degrees.

Adapted for stationary mounting on piers or barges and traveling mounting on rollers, track wheels or gantry towers, or crawlers for two smallest models. Self-propulsion if desired.

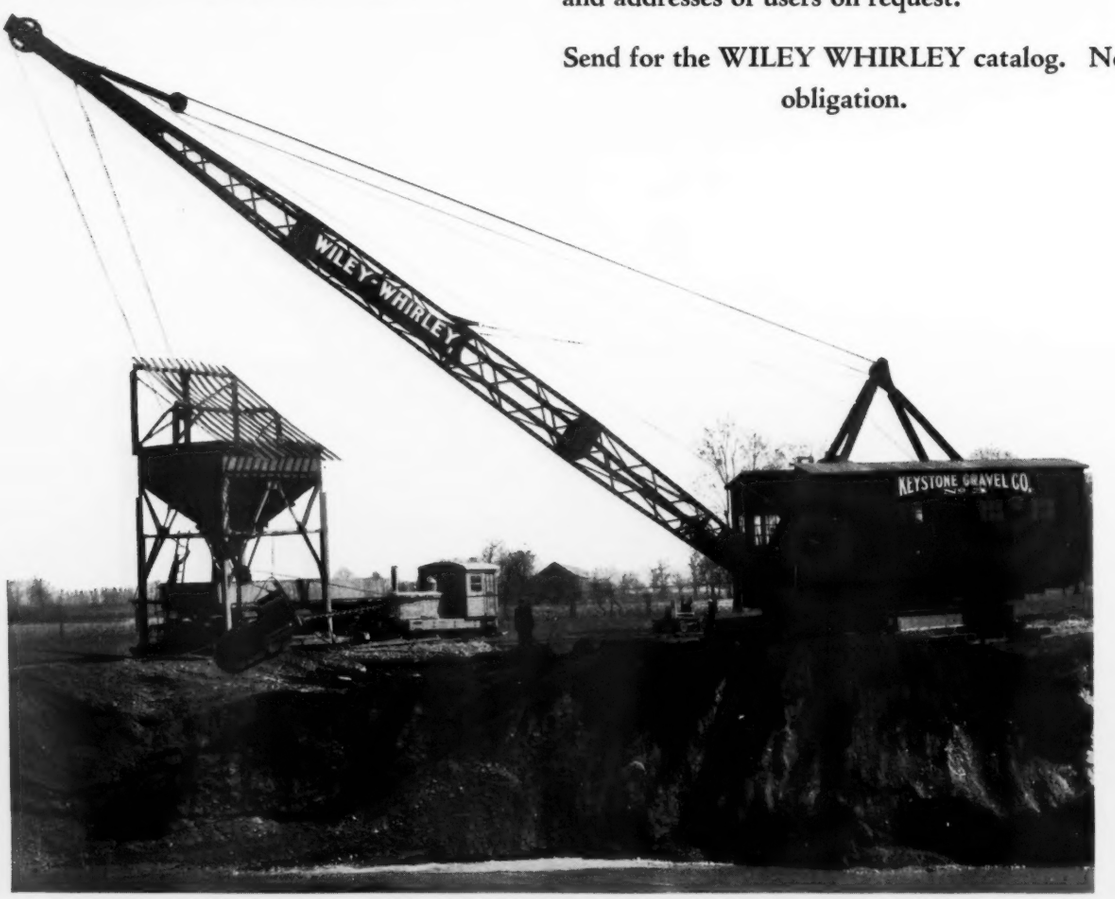
Full revolving, either by cable or gear swing. Revolving speed, 2 to 3 R.P.M. Independent swinging engines.

Full boom lifting capacities from 5 tons at 50 feet to 10 tons at 100 feet. Bucket capacities, either clamshell or dragline, up to 3½ yards.

Power, either steam, electric or gasoline. Hoisting speeds from 170 to 200 feet per minute.

Material, all steel. Design simple. Construction rugged. Operation reliable and economical. Built since 1919. Many in operation. Names and addresses of users on request.

Send for the WILEY WHIRLEY catalog. No obligation.



THE DAYTON WHIRLEY CO.

DAYTON — OHIO

Truck-loading bin (left), Kern storage tower, and the screening-crushing unit, with gravel pit in the background.

Tower System of Stock-piling Creates Interest in Aggregate Field

Method Permits Economical and Constant Production Despite Fluctuating Demand

By M. F. BEISBIER

THE Tower System, a new idea in sand and gravel stock-pile design, has proved its worth in several Mid-western plants. The new design presents several features of great value and efficiency to gravel-pit operators, in addition to its inherent low cost. The Fred T. Kern Co., Milwaukee, Wis., consulting engineers, is the originator of the system, of which a patent is now pending, the major claims having been already approved.

An excellent example of the tower arrangement of stock-piles can be found in the plant of the Hillside Sand & Gravel Co., at Prospect, Wis., which was built in the fall and winter of 1929 and has been in operation since the spring of this year.

Its principal difference in design from the bin-type plant is in the arrangement of stock-piles and washing screens. The production equipment in the pit, the scalping screens, crushers and return-circuit conveyors are essentially the same as found in the familiar type of plant.

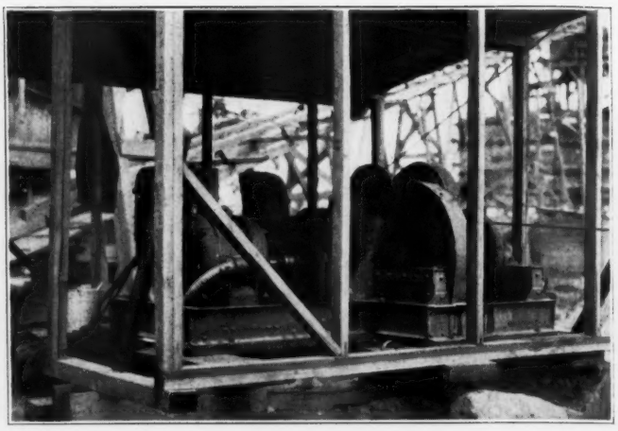
The general arrangement of the stock-piles is

The power drag-scraper in the Hillside pit.

Loaded drag-scraper approaching plate-feeder hopper.

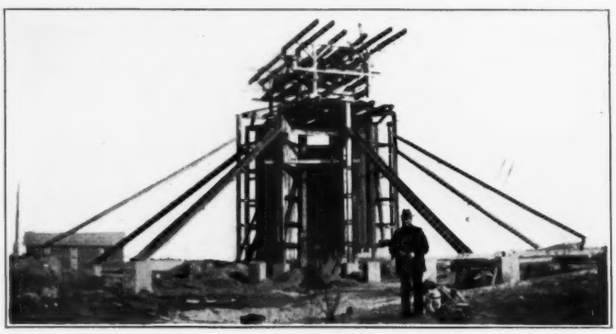
circular, there being seven piles of material, each separated by a partition radiating from an octagonal-shaped tower in the center. The eighth compartment is open, providing space for a belt conveyor. Inside the tower, at the foot of each stock-pile, is a feeder-bin gate, each discharging to the belt conveyor which transports the aggregates to the Butler hopper for truck loading. As four different sizes of aggregates are stocked in seven compartments, it is possible to proportion the delivered aggregates to any specification by merely regulating the flow of material through the feeder-bin gates. Under normal operating conditions the stock-piles will be replenished as fast as shipments deplete them. In the event of a temporarily glutted market or a shortage of trucks, the excess aggregates are scooped from the compartments by means of a power drag-scraper hoist and a scraper which are operated from a circular track extending around five of the partitions, permitting access to every type of material stocked. Enormous stock-piles of material may be built by this method and, as soon as delivery of materials is resumed, the drag scraper may be reversed, and the stocked materials scraped back into their respective compartments.

Raw-materials hopper and conveyor from plate feeder.



Variable-speed winch for drag-scraper.

The washing screens and sand-settling tanks are located above the tower, mounted on a platform. Each size of material is chuted to its respective stock-pile. Under the present arrangement, two compartments are used for 2-in. gravel, two for 1-in. gravel, one for pea gravel, and two for sand. The chutes are built to allow alternation of the aggregates from one stock-pile to the stock-pile of the same material on the other side of the tower.



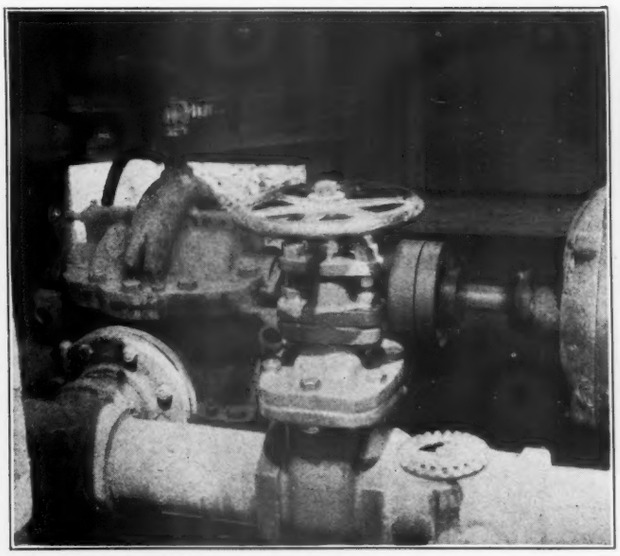
Storage tower during construction.

Kern tower system and truck-loading hopper, showing circular track in lower right corner.

The drive mechanism for scalping screen and bucket elevator.

The aggregates are recovered from the stock-piles by means of a belt conveyor located in the open compartment. The conveyor is placed below the feeder-bin gates in the tower and carries the aggregates to the Butler hopper located about 100 ft. from the tower. Four partitions in the hopper provide a small stock of aggregates for the trucks which are loaded beneath. A Butler weighing hopper is used to weigh all aggregates for road construction.

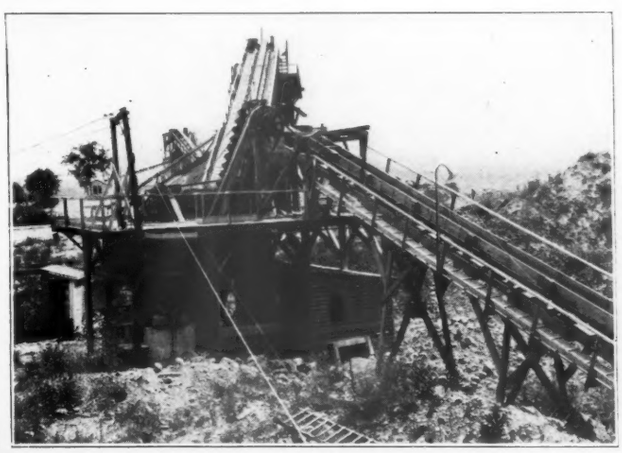
Crusher showing power take-off for elevator head shaft.



Centrifugal pump that handles clarified waste-water to creek.

The designers of the tower system claim four distinct advantages for their method of stock-piling. The advantages are:

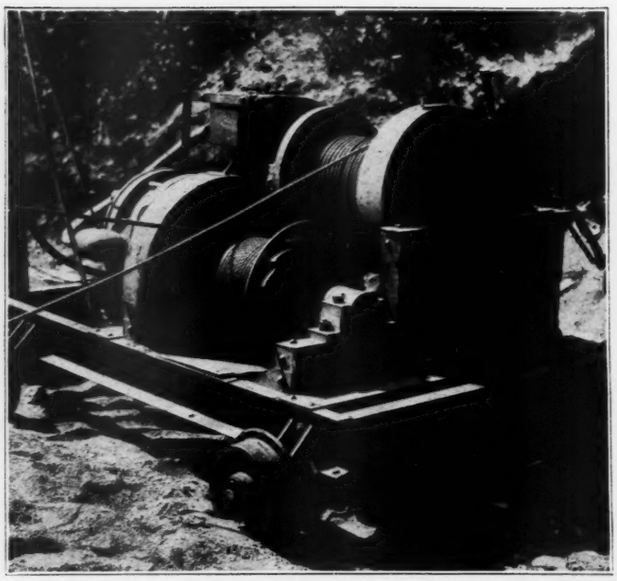
(1) The plant may be operated continuously without regard for shipping demands. By means of the circular-track winch and the power-drag scraper, stock-piles can be formed of sufficient size to enable the plant to operate for weeks under full capacity. Likewise, large stock-piles of aggregates permit the shipment of greater quantities of material than the normal productive capacity of the plant.



Scalping screen, crusher and bucket elevator.

(2) Materials can be proportioned exactly as desired. Any proportion of material can be conveyed to the loading hopper by merely regulating the flow of each aggregate through its feeder-bin gate to the conveyor belt.

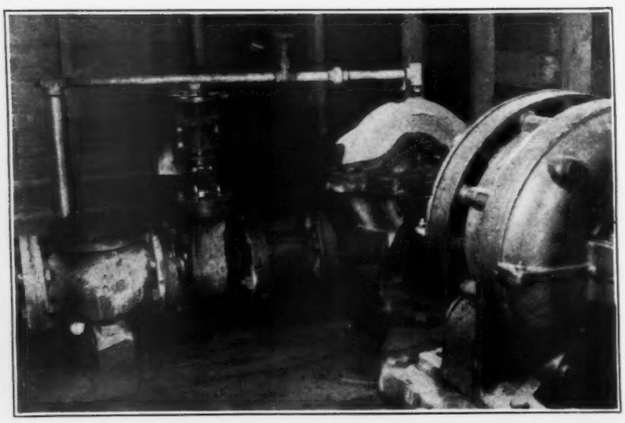
(3) Sliming of clay is made possible by the daily use of alternate compartments. Clay balls, which pass through the washing screens into the stock-piles, slime readily when the wet aggregate is allowed to settle in the stock-pile for twenty-four hours. Shipments are made from one stock-pile



Portable power scraper hoist.

while the produced material is stocked in the other compartment. The following day the flow is reversed. As the aggregate passes to the loading hopper, it passes over a washing screen where water under pressure from a washing nozzle rinses off the clay slime. This method insures absolutely clean aggregates.

(4) There is a saving of 15 to 20 per cent in the initial cost. The tower arrangement is essentially simple in design being built of steel framing and the partitions of wood with I-beam ribs. No extensive

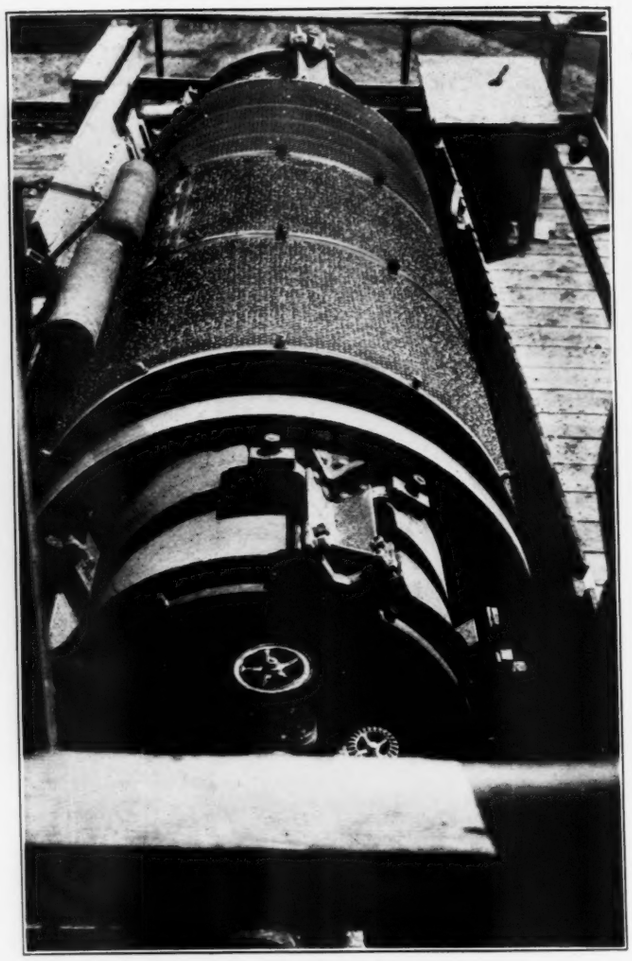


This pump furnishes supply of fresh water.

footings and columns are required, as the weight of the material is carried on the ground. Extensive stock-piles can be provided with very little expense.

(5) The operating cost is lowered, with production of materials independent of delivery. The shutdown of any individual unit does not affect shipment of materials. Likewise, production of materials is not held up waiting for delayed trucks or for other shipping difficulties.

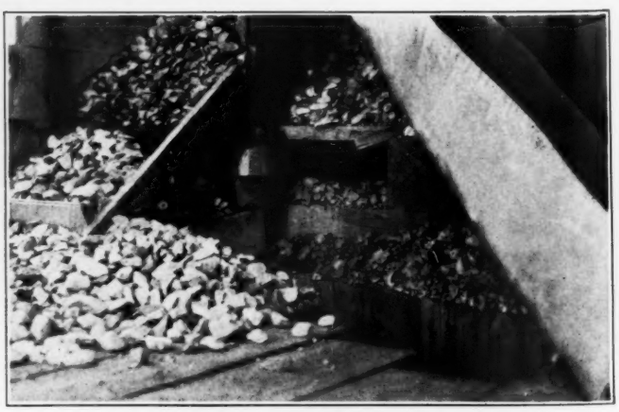
The pit of the Hillside company is located on 26 acres of leased land near Prospect Hill, Prospect, Wis., which is the highest point in the state of Wisconsin. The bank of gravel averages about 75 ft. in



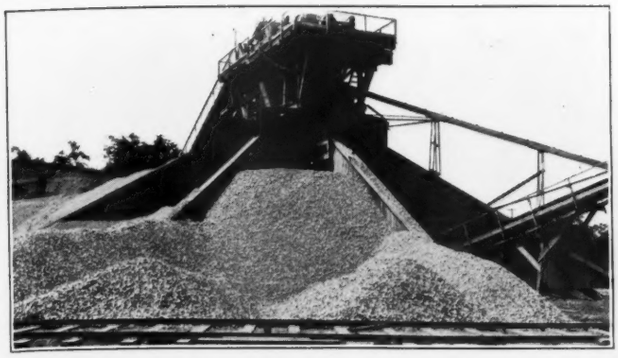
The washing screen, showing rollers.

height, with an additional layer of 20 ft. below the present operating level.

A Sauerman 1-cu. yd. drag scraper, powered by a Kern variable-speed hoist, manufactured by the Construction Machinery Co., Waterloo, Ia., loads the gravel in the pit, dragging it to a loading hopper. A heavy grizzly of steel rails prevents large boulders from passing into the hopper. A Telsmith plate feeder automatically loads the conveyor which transports the material to the scalping screen. It is driven by means of a chain and sprocket on the



Classified gravel being chuted to compartments.



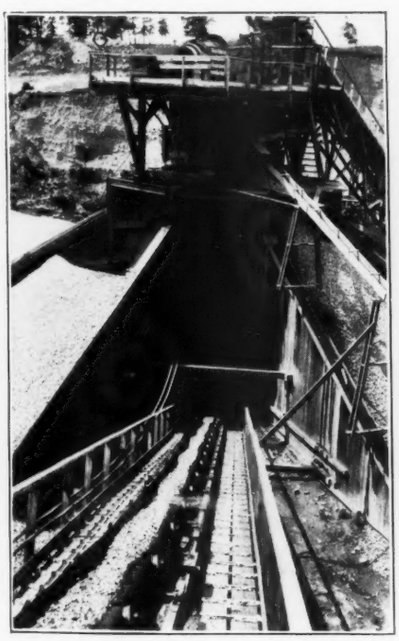
Stock-piles about the tower, circular track in foreground.

belt-conveyor tail-pulley shaft. This conveyor is a Hewitt Gutta Percha Rubber Co.'s 24-in. belt, mounted on Dodge pulleys and idlers, 82 ft. long between shaft centers.

The scalping screen and the crusher form the second unit of the plant. This unit is located midway between the Sauerman drag scraper and the Kern stock-piles. The Telsmith 40-in. by 10-ft. scalping screen permits all materials below 2 in. to pass to the washing screens. Oversize gravel falls directly into the spider of the Telsmith 8-A crusher. A Telsmith No. 4 bucket elevator, 24 ft. long, returns the crushed gravel to the scalping screen, where it is screened again for possible oversize pebbles. One Allis-Chalmers 50-hp. motor serves as the power unit for the crusher, the scalping screen, the bucket elevator, the conveyor and the plate feeder. The motor, with its control apparatus, is housed in a small frame building below the scalping-screen platform. It is belted to the crusher-pulley shaft, where another pulley transmits power to the head shaft of the bucket elevator which, in turn, is belted to the conveyor head shaft. The scalping screen receives its power, by means of a sprocket and chain, from the head-shaft of the belt conveyor.

The truck-loading bin, with weighing hoppers.

The washing screens are mounted on a platform above the tower. The weight of the platform, washing screens and part of the conveyor is the



The tower and the conveyor to the truck-loading bin.

Close-up of the tower showing conveyor leaving hopper with dumping gates in the interior.
Note washing jet mounted over conveyor belt for slime rinsing.

Looking down into the tower at dumping gates and conveyor hopper.

only weight carried on the H-beam columns of the tower. The platform is of timber construction with plank floors.

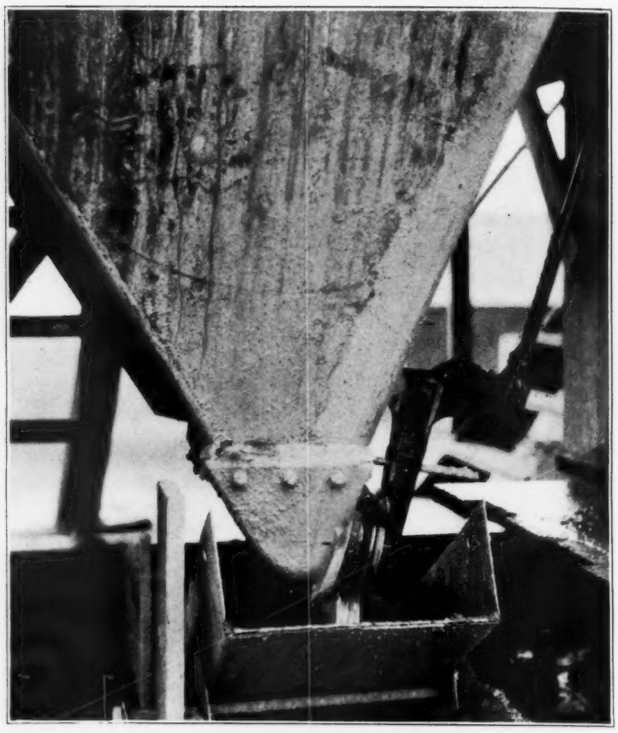
The sand and gravel passing the scalping screen are conveyed to the washing screens on another Hewitt Gutta Percha rubber belt mounted on Dodge pulleys and idlers. This conveyor is 136 ft. long and is gear-driven by a 15-hp. motor. A Telsmith Hercules 40-in. by 17-ft. washing screen is used to classify and wash the materials. It is built in five sections, there being 4 ft. of ½-in., 8 ft. of ⅞-in., 4 ft. of 1¼-in., and 3 ft. of 1½-in. perforated screens, with a 6-ft. sand jacket having ¼-in. slits. Two iron rollers prevent sand particles from wedging in the slots.

The washed and classified material is chuted to its respective compartment below. One compartment is used one day while shipments are made from the other. The following day the flow is reversed. This method allows the possible clay balls to slime, in order to be rinsed off at the Butler loading hopper. The sand from the washing screen is flumed to a Telsmith No. 7 settling tank which is automatic in its discharge, and is located directly below the washer platform.

The construction of the tower and stock-pile compartments affords an interesting study. The columns for the tower are 25 ft. in height, set in an octagonal arrangement, each with a concrete footing. The sides of the octagon are five feet in length. Each partition radiates from the tower columns. Another H-column is set about ten feet from every tower column forming another octagon, concentric with the octagonal tower. From these columns, I-beams sloping to the ground form the backbone of each partition. The partitions are 25 ft. high at the H-beam columns, and are 46 ft. long from the tower. Timber framing and planking are used, forming the partition walls.

M. Lachner, president and general manager.

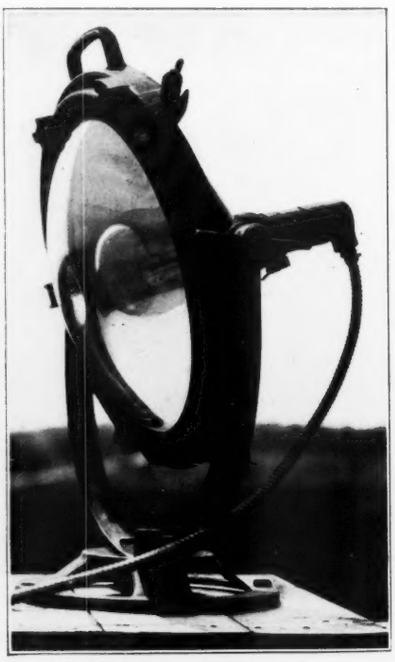
At the foot of each stock-pile, inside of the tower, a dumping gate discharges into a steel hopper. Rotary feeder-bin gates can be used for accurate control of flow. In this plant, ordinary hand-operated gates are used. The steel hopper feeds a belt conveyor leading to the Butler loading hopper. This conveyor



Sand-settling tank and dumping chute.

is 115 ft. long, using Hewitt 20-in. Gutta Percha rubber belting with Dodge idlers and pulleys. A 10-hp. motor serves the drive. The tail pulley of the conveyor is located several feet below ground-level in order to receive the material from the hopper.

A portable Kern winch, mounted on flanged wheels, has access to five of the stock-pile compartments. It travels on a circular track which is located on a radius of about 100 ft. from the tower. The Kern winch is electrically driven by a 25-hp. motor. A Crescent ½-cu. yd. drag scraper made by Sauerman Bros., Inc., moves the material into and from the hopper. The steel pulley-block for the drag-scraper cable is hung from the top of the tower. This pulley is moved to each compartment whenever it is necessary to use the power scraper. It is planned to later use a circular



One of the flood-lights.

(*Continued on page* 47)

Scalping-screen and crusher building (left), hopper, and screening-washing plant (right).

Indiana Plant Operates Throughout the Year Despite Adverse Weather

Sand-and-Gravel Operation at South Bend Has Capacity of 700 Cubic Yards per Day

THE H. G. Christman Co. sand and gravel plant, located three miles north of South Bend, Ind., has the rather unusual record of having operated every month during the past year. It is true that, at times, the weather was so bad that operation was impracticable, but large stock-piles made it possible to make deliveries at any time. It is interesting to note from the work sheet that the plant operated four full days in January, all of February, and half of the working days in March.

When an icy grip closed in and stopped actual production, the usual plant changes and adjustments were made. As soon as the weather broke, the plant soon began operating again at full tilt to restock the depleted storage piles. As a result, the plant was not only arranged for a larger capacity, but over 25,000 cu. yd. of material were sold during what is normally the "closed season."

There are some rather extensive beds of sand and gravel scattered about the city of South Bend. The Christman deposit consists of 87 acres of material which averages about 60 per cent sand and 40 per cent stone. About 30 acres have been excavated to a depth of 10 to 12 ft. The overburden is shallow, rarely going over 3 ft. deep, and the deposit is uniform down to a depth of 60 ft., where water is encountered. Test holes show that the deposit runs considerably deeper.

The Christman plant, with a capacity of 700 cu. yd. per day, produces washed building sand and three sizes of stone: ¼-in. to ¾-in.; ¾-in. to 1-in.; and 1-in. to 2-in. The material is sold for state and county highways, city paving, and construction work. All deliveries are made by motor truck with a range as great as 10 miles at times.

At present, material is taken from two levels.

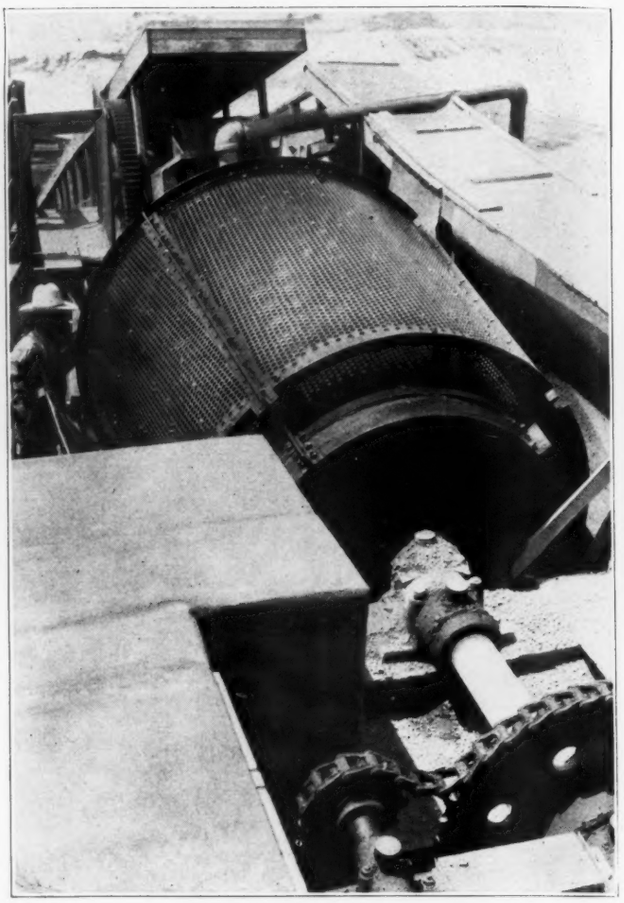
Trucks being loaded on upper level, and cars below.

Side-dump cars discharging loads to grizzly over the hopper.

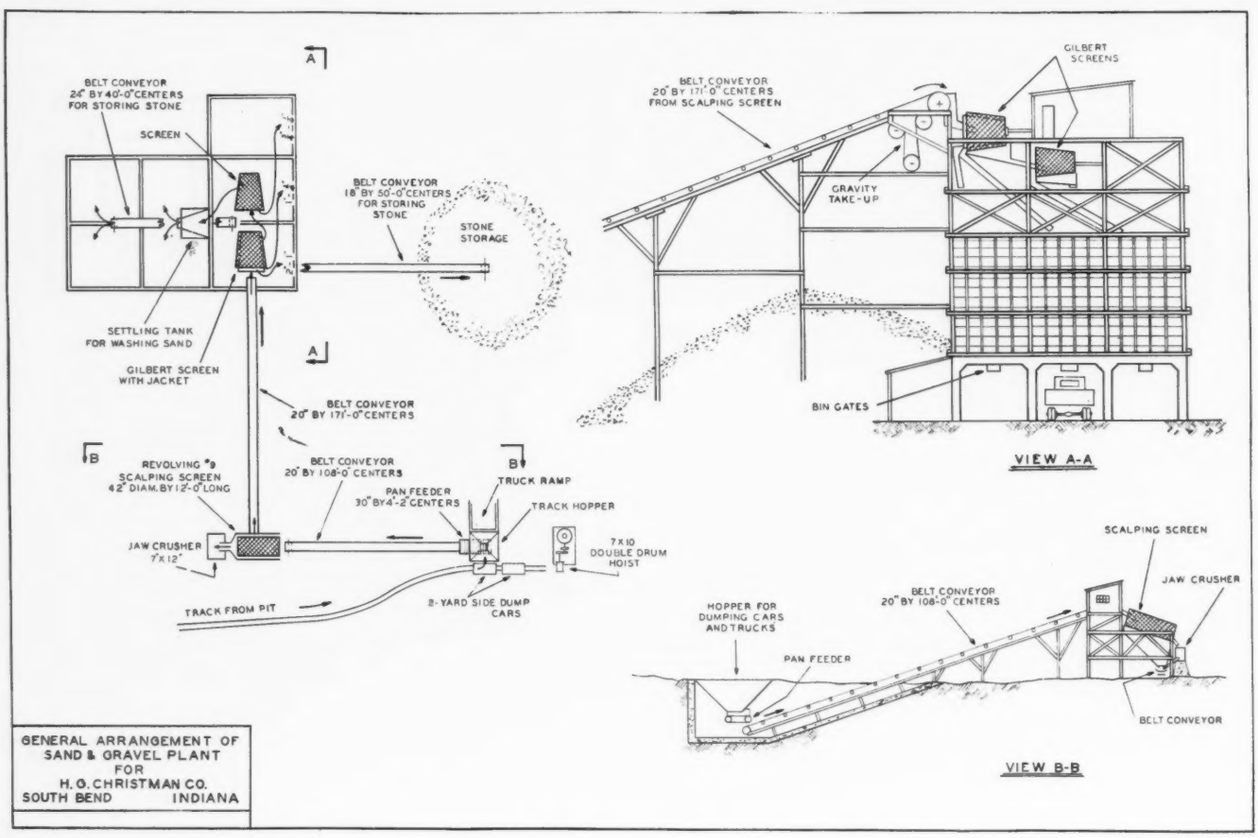
The 42-in. by 12-ft. scalping screen.

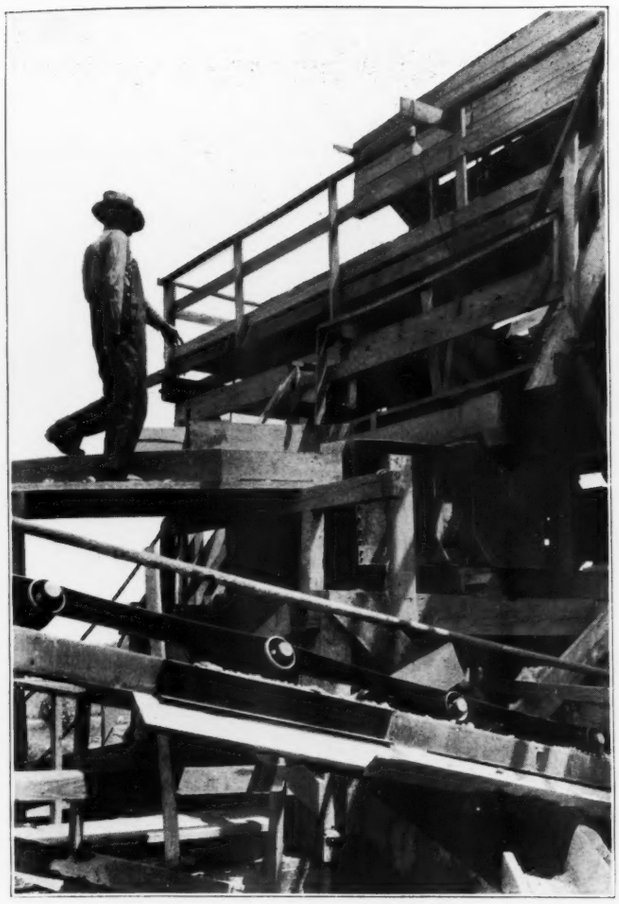
One excavation is to a depth of about 10 ft. and another from a pit, with a floor 55 ft. deep, just above the water level.

An unusual condition exists in the pit and the excavation operation has been worked out to take advantage of the peculiarity of the deposit. Due to the sharp character of the sand and the density with which it has been packed, the walls of the pit stand vertically for a height of 40 to 50 ft. In fact, the formation is so solid that shovels or trucks would be perfectly safe in operating within a few yards of the edge of the bank. The banks have little tendency to cave, but there is a continuous



This screen washes and prepares two grades of material, while another screen, beneath, makes a third grade.


BELT CONVEYOR 24" BY 40'-0" CENTERS FOR STORING STONE
SCREEN
BELT CONVEYOR 18" BY 50'-0" CENTERS FOR STORING STONE
STONE STORAGE
SETTLING TANK FOR WASHING SAND
GILBERT SCREEN WITH JACKET
BELT CONVEYOR 20" BY 171'-0" CENTERS
REVOLVING SCALPING SCREEN 42" DIAM. BY 12'-0" LONG
BELT CONVEYOR 20" BY 108'-0" CENTERS
PAN FEEDER 30" BY 4'-2" CENTERS
TRUCK RAMP
TRACK HOPPER
JAW CRUSHER 7" X 12"
7 X 10 DOUBLE DRUM HOIST
TRACK FROM PIT
2-YARD SIDE DUMP CARS
A
B
GILBERT SCREENS
BELT CONVEYOR 20" BY 171'-0" CENTERS FROM SCALPING SCREEN
GRAVITY TAKE-UP
BIN GATES
VIEW A-A
SCALPING SCREEN
JAW CRUSHER
BELT CONVEYOR 20" BY 108'-0" CENTERS
HOPPER FOR DUMPING CARS AND TRUCKS
PAN FEEDER
BELT CONVEYOR
VIEW B-B
GENERAL ARRANGEMENT OF SAND & GRAVEL PLANT FOR H. O. CHRISTMAN CO. SOUTH BEND INDIANA



The man points to the settling tank. The stock-piling conveyors are in the foreground.

trickle of sand from the entire vertical wall of the pit. The face remains vertical, but there is a gradual accumulation of sand at the bottom.

A P&H ⅝-cu. yd. gasoline shovel is used on the pit floor to load Western 2-cu. yd. cars with special side-dump bodies. These are hauled in trips of two cars with cable, up to the receiving hopper, by means of an American 7-in. by 12-in. double-drum steam hoist.

On the 10-ft. level a P&H ½-cu. yd. crane is used to load either gasoline-motor trucks, which are backed up a ramp and discharged into the receiving hopper, or Western 2-cu. yd. cars that are hauled to the hopper by a Plymouth 10-ton gasoline locomotive. In addition to working the 10-ft. level, this ½-cu. yd. crane digs holes several yards back from the face of the pit and to the same depth. In this way, the material is loosened for the shovel in the pit.

The present plant is equipped for producing washed sand and gravel well above the state and county specifications. It was originally designed three years ago by Julius B. Christman, was equipped with Stephens-Adamson screens and conveyors, and produced an average of 500 cu. yd. per day. The changes made by Mr. Christman last winter increased the daily capacity to 700 cu. yd.

One feature of the layout is the economy with which the plant is operated. Mr. Christman says that the operating crew never exceeds eight men, including the shovel crews and the plant superintendent. The care taken in building chutes and loading spouts has proved well worth while in the resulting smoothness of operation and lack of jams that often happen even in some of the most expensive plants.

Material dumped into the receiving hopper is withdrawn in a steady volume by means of a Stephens-Adamson self-contained roller-track pan feeder 30 in. wide by 4-ft. 2-in. centers. An S-A belt conveyor 20 in. wide by 108 ft. long elevates to a Stephens-Adamson 42-in. by 12-ft. No. 3 revolving screen which scalps off all stone over 2 in. and discharges to a Smith Engineering Works 7-in. by 12-in. jaw crusher set to crush to 2 in. or under.

A Stephens-Adamson belt conveyor 20 in. wide by 171 ft. long collects both the fines from the scalping screen and the crusher discharge. The loading chute has been arranged to load the fines onto the belt before the crushed stone from the crusher. This is an ideal loading condition and protects the belt from a great deal of unnecessary wear. Both conveyors are equipped with S-A No. 60 plain-bearing carriers. We might add that, due to careful and systematic lubrication, these idlers are surprisingly easy on power.

(*Continued on page* 57)

Delivery gates beneath storage bins. The men in foreground are Eph. Kindig, plant supt., and Julius B. Christman, general supt.

Produces 1,300 Tons of Sand and Gravel Per Shift With Five Workmen

Labor-Saving Methods Make New Jersey Plant a Model of Economical Operation

BY W. E. TRAUFFER

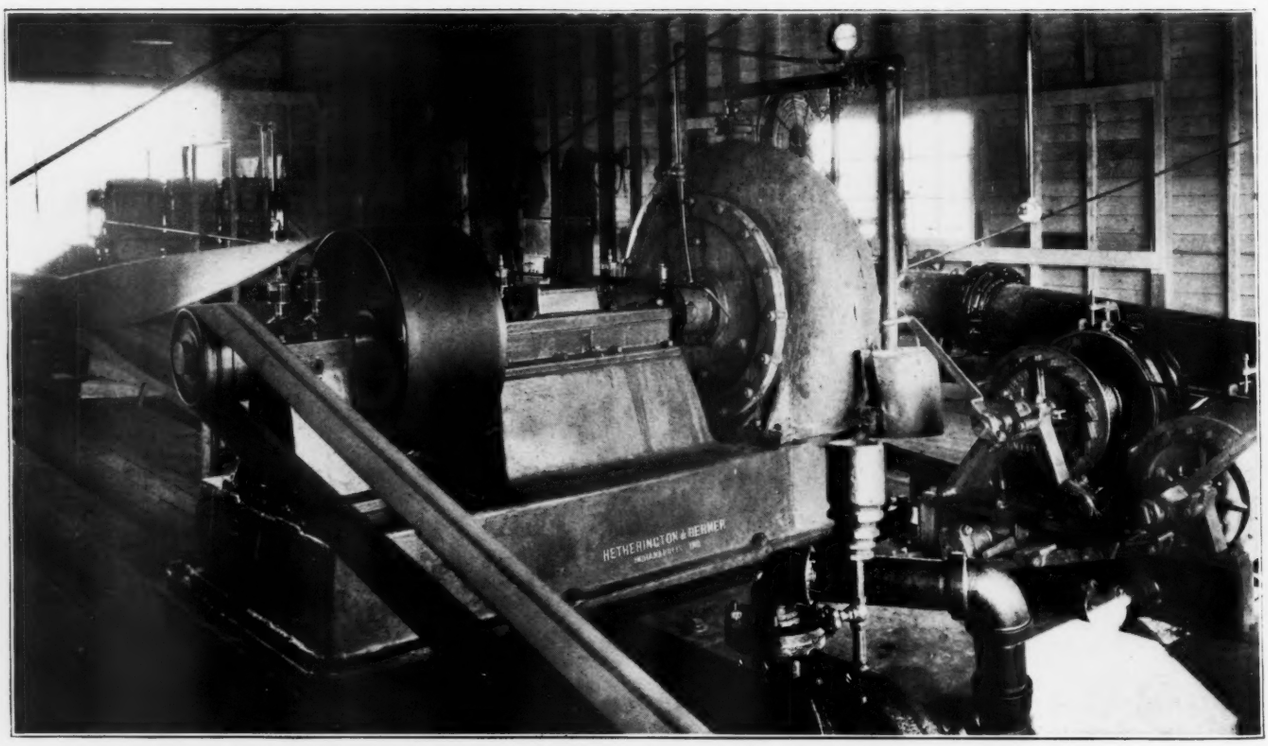
THE sand and gravel plant of Henry E. Strathmann at Paulsboro, N. J., which went into operation on March 1, 1929, has several interesting features which make for economy of operation. Chief among these are the tunnel method of recovering stored material, the barge shipment to yards in Philadelphia, and the small number of men needed to operate. It is a dredging operation with a capacity of about 1,300 tons in a 10-hour day, although 2,500 tons have been produced when working two shifts.

The layout of the plant was designed by Henry W. Peterson, general manager, who had a number of years' experience in the river dredging business, using the endless chain system of dredging. His plan was to provide sufficient storage space over the loading hoppers in the tunnel to allow 600 tons of any one material to run by gravity onto the belt thus permitting a barge to be loaded independently of the dredge. The Webster Manufacturing Co.'s engineering department worked up the details and furnished the engineering data for the construction work which was under the supervision of Edward E. Peterson, superintendent of the plant. The construction was done by the company's own forces.

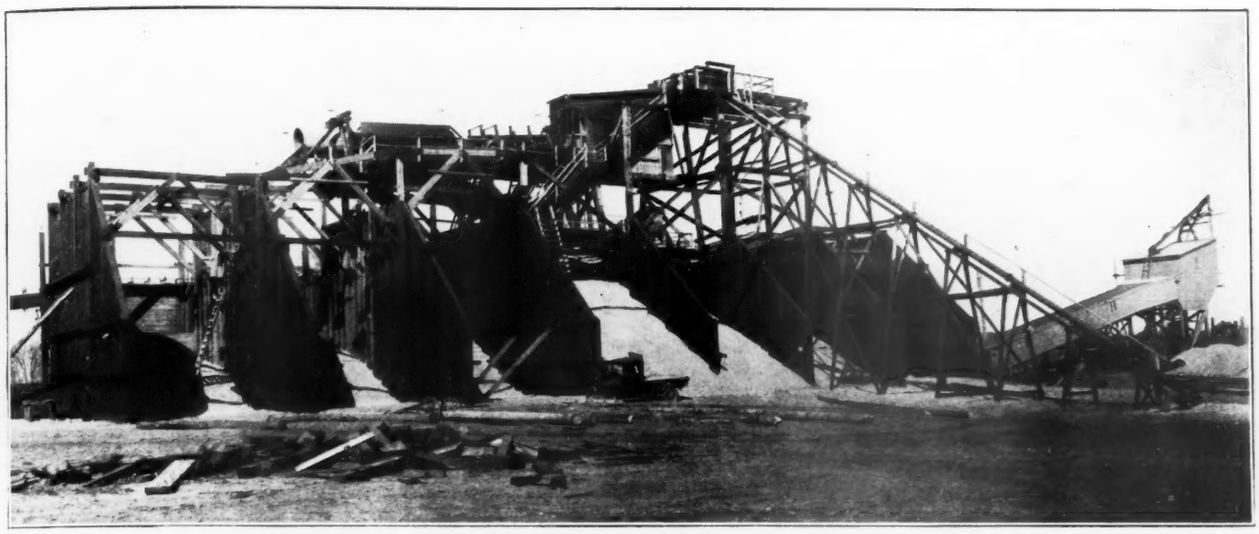
The property consists of 200 acres on Mantua River, N. J., about 2 miles from where it enters the Delaware River and within the city limits of Paulsboro. The deposit runs from 20 per cent to 50 per cent gravel, which is well graded and flinty with very little over 2½ in. It is being dredged to a depth of about 35 ft. although good gravel is known to run to a much greater depth.

The dredge hull is built of steel drums in fourteen sections and is 68 ft. long by 35 ft. wide. A plain pipe nozzle with Goodyear suction hose is used. A two-drum Clyde hoist operates the boom and nozzle and the shore lines. A Fairbanks-Morse 2-in. centrifugal pump primes the dredge pump and a 4-in. by 3-in. centrifugal pump of the same make provides a jet which loosens up the deposit through a nozzle at the dredge intake. All of these are belt-driven from the same engine which operates the dredge pump. The Hetherington and Berner 10-in. all-manganese centrifugal dredge pump is driven through a Vim special triple-leather belt by a 184-hp. 6-cylinder Le Roi gasoline engine operating at a normal speed of 1,000 r.p.m.

The dredge pumps through 800 ft. of pipe line supported on barrel pontoons to a surge tank at the



Interior of the dredge, showing gasoline engine, main pump, belting, and 2-drum hoist.



General view of the Strathmann plant before completion of construction.

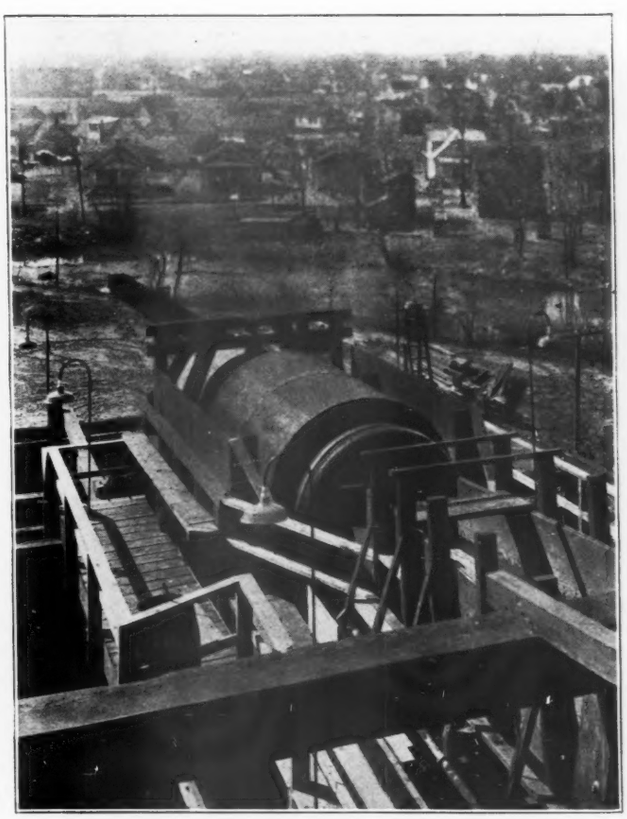
plant 55 ft. above ground level. South Chester Tube Co. special abrasion-resisting pipe is used. Sections are connected by threaded flanges with ⅝-in. tubular packing between the flanges.

Two sections of Goodyear suction hose each 7 ft. long are used in the discharge line, one at the stern of the dredge and one at the shore line, to take care of a 5-ft.-6-in. rise and fall in tide. Three dredging sleeves are used in the same line and were manufactured by the Quaker City Rubber Co.

At the surge tank some of water is run off, the remainder of the material going over a plate grizzly with 2-in. square openings. The oversize goes through a flume to a waste pile near the plant. The material passing through the grizzly goes through another flume to a triple-jacketed Webster revolving screen. The middle jacket is 6 ft. 6 in. in diameter by 18 ft. long and the outer jacket 8 ft. 6 in. in diam. by 9 ft. 6 in. long. The three sizes of gravel produced are chuted directly into bins.

The sand passing through the ¼-in. outer jacket, together with the water, goes through a flume to two 40-ft. Webster paddle-drag boxes with paddles 6 in. deep by 5 ft. wide. The first, operating at the rate of 48 flights per min. produces coarse sand. The second, operating at 20 flights per min., produces fine sand. The fine sandbox discharges the overflow water and dirt into a sand-settling tank of own design and make with four counter-weighted flap valves on the bottom. These automatically open when the sand has piled up to the required depth and close when sufficient sand has run out. Over 200 tons of masonry sand testing about 96 per cent silica is recovered in this manner each day. The overflow water and silt runs through a long wooden flume to a low piece of residence property near the plant which is being filled in this manner.

All of the products are discharged from the highest possible elevation into seven open-sided bins with a total capacity of 5,000 tons recoverable without trimming for barge loading. These are formed by timber partitions and are closed on one side to permit truck loading, the other side being open. Trucks are loaded through Webster 20-in. by 20-in. Duplex gates, 150 tons of each material being available for the purpose when the bins are full. A horizontal 14-in. belt conveyor running the length of the plant under the screens and sand boxes is used to divert any desired size to a 400-ton-capacity truck bin at the end of the plant for state highway work. Goodyear conveyor belting is used here.



Revolving screen as viewed from top of plant.

Loading barge at dock, steam tug "Rebecca" in distance.

Any size or mixed sizes are recovered from storage by a belt conveyor in a tunnel running longitudinally under the plant. The material forms its own hopper and at least 500 tons can be recovered from each bin by gravity with no rehandling. Each bin has two gates discharging onto the 30-in. belt conveyor which operates on 336-ft. centers and has a capacity of 550 tons per hour. The conveyor belting was made to the company's specifications by the Quaker City Rubber Co. It is 6-ply 32-ounce duck with a 3-16-in. top cover and 1/8-in. bottom and has reinforced edges to prevent fraying.

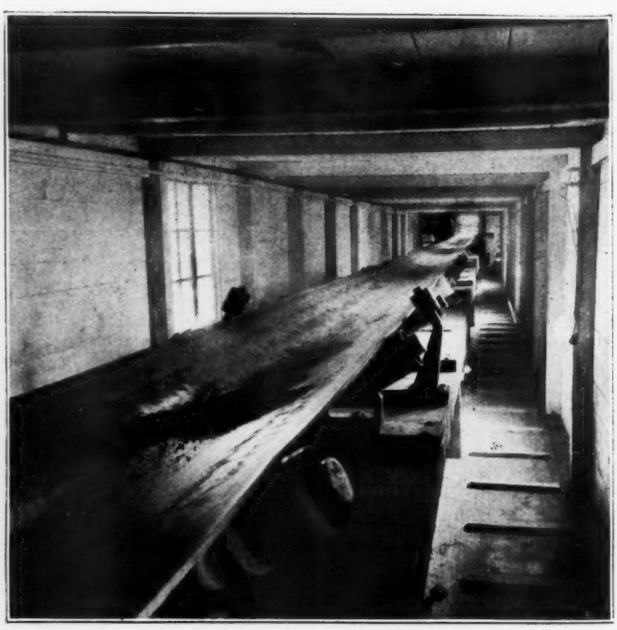
The loading conveyor runs horizontally under the bins and then rises on a slope of 14 per cent to a height of 30 ft. at the loading dock where it has a gravity take-up. The inclined section of the conveyor and the loading end are enclosed in a frame housing. The conveyor discharges through a flexible chute into flat-decked lighters for shipment. A three-drum Clyde hoist in a weatherproof housing raises and lowers the loading chute and operates the lines which move and hold the barges in place for loading.

Operation of this plant is claimed to be unusually economical and this claim seems to be amply substantiated. Exclusive of the dredge, only 110 hp. are required to operate the entire plant. The revolving screen and the two sand-settling tanks are driven by a single General Electric 40-hp. motor. The main conveyor is driven by a 40-hp. motor, the boat-loading hoist by a 20-hp. motor and the two small belt conveyors each has a 5-hp. motor.

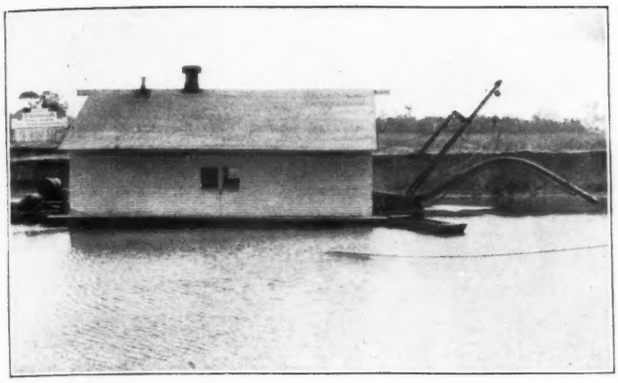
The entire plant is operated with only five men, in addition to the superintendent, on each shift. These are: the dredge operator and his assistant; one at the plant watching operations and loading trucks and two loading boats and operating the tunnel gates.

The plant has many novel and unique features which were designed and installed by the management. There is an electrical signal arrangement between the plant and the dredge whereby, if the pump is delivering an insufficient amount of solids, the plant man signals the dredge operator who crowds his nozzle into the dig until he gets four bells from the plant, the signal that he is pumping the

Duplex gates (left), drag boxes (right).



Belt conveyor from tunnel to barge-loading dock.

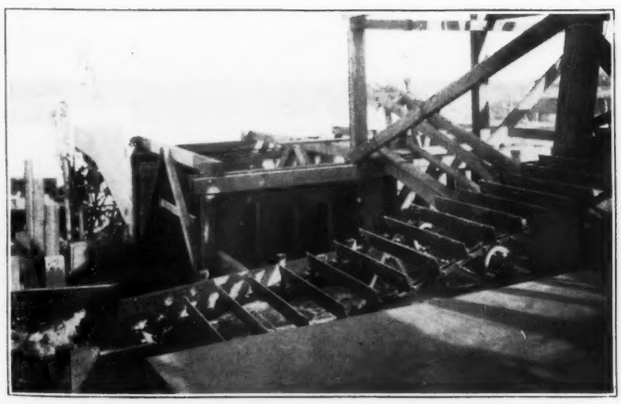


Side view of dredge.

proper amount of material. The dredge operator then notes the reading on his vacuum and pressure gauges and knows conclusively how to run in order to obtain the best production. The tunnel is fitted with a safety switch operated by a sash-cord running the entire length so that the man in the tunnel can stop the whole operation of loading boats, but it can be started only by the man in charge of the loading, thus if anyone is working in the tunnel, a weight is put on the sash-cord and the belt cannot be started. This same idea is carried throughout the plant. The entire operation can be stopped from any one of the seven stations but can be started only from one place.

Transportation by water from Paulsboro to Strathmann's two wharves in Philadelphia and for other waterfront deliveries is taken care of by six wooden-deck lighters, one 150-hp. steam tug and one 170-hp. Standard Diesel tug. The lighters have a capacity of from 500 to 700 tons. Strathmann's wharf on the Delaware River is at the foot of Ontario St. in Philadelphia, a distance of 8 miles from the plant and entails a run of only three hours. The second wharf is at 51st St. on the Schuylkill River in Philadelphia and is 5 miles from the plant and the run entails only two and one-half hours. The proximity of the wharves permits the lighters to load and discharge on the same day and it is not unusual for the same lighter to be loaded twice on the same day.

The screen, sand tanks, belt conveyors, chain and sprocket drives, loading hoppers in the tunnel and gates in the truck-loading bins were furnished by the Webster Manufacturing Co. All of the electrical equipment, including motors and switches, were furnished by the General Electric Co. The plant is of timber construction with concrete foundation.



Paddle-drag boxes which classify the sand.

Henry E. Strathmann is the owner of the plant, Henry W. Peterson is general manager and Edward E. Peterson is superintendent. Plans are in process for doubling the capacity of the plant, the demand for Paulsboro products far exceeding the production.

Tower Stock-piling Creates Interest

(*Continued from page* 40)

mono-rail around the top of the tower, permitting the pulley to move into place as the hoist is moved on its track.

Allis-Chalmers motors are standard throughout the plant, as is Hewitt Gutta Percha belting and Dodge Mfg. Co. idlers and pulleys. Telsmith equipment is used in the majority of process operations.

This particular plant, being within profitable trucking distance of the Milwaukee market, was designed for truck loading. No side-track facilities are available. A Butler Bin Co. hopper, having four partitions for the various sizes of aggregates, is used for loading trucks. Each partition has a capacity of 10 cu. yd., and is fitted with a dumping gate operated from a platform below. A Butler two-compartment weighing batcher mounted on tracks below the hopper, can be moved below the dumping gates of the hopper to receive any size of aggregate. All aggregates used for road construction can be accurately weighed before loading into the trucks. The capacities of the weighing-batcher compartments are 12 cu. ft. of sand and 20 cu. ft. of gravel.

As the material leaves the belt conveyor to enter the Butler bin, it passes over a rinsing screen for the removal of slimed clay. This screen is placed directly in front of the head pulley of the conveyor, so that the natural flow strikes it. A jet of water is directed against the material as it flows down the screen and the dirty water is flumed to waste. A swiveled chute set over the center of the hopper directs the material to its respective compartment in the loading bin.

The fresh-water supply of the plant is received from a spring-fed creek passing through a nearby farm. An Allis-Chalmers centrifugal pump with a capacity of 600 g.p.m. at 197-ft. head, direct-driven from a 50-hp. motor, furnishes all of the water for washing purposes. The waste water is flumed to a pond near the plant where the clay settles. Another Allis-Chalmers centrifugal pump with a capacity of 400 g.p.m. relieves the pond of the excess clear water, discharging it into the creek.

At present, the plant is manned by seven men including their foreman. The estimated capacity is placed at 500 cu. yd. per 10-hr. working day. Officers of the Hillside Sand & Gravel Co. include M. Lachner, president; T. Filich, vice-president; and E. J. Siegmund, secretary-treasurer. The company's office is in the Plankinton Bldg., Milwaukee, Wis.

Novel Aggregate-Plant Design Permits Night Operation by Two Men

Sand is Separated from Gravel on New Screen and Handled Entirely by Pumps

By M. F. BEISBIER

IOWA'S newest sand and gravel plant possesses features of design that should be of interest to every operator of dredge plants. This plant, located at Muscatine, Ia., is capable of being manned by two men on its night shift. An arrangement of stockpiling of sand and gravel, and overnight storage of oversize gravel, permits the dredge operator and the sand-pump operator to continue production under full capacity throughout the night shift. A crew of twelve men on the day shift crushes the accumulated oversize gravel, classifies the material, and handles the carloading.

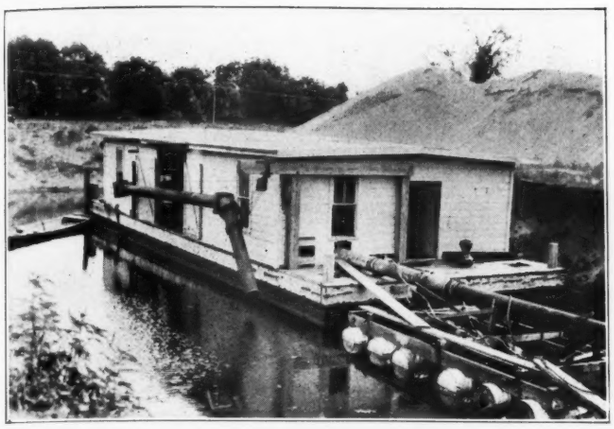
Muscatine Island, while not really an island, is the location of the new plant. It is an unusual area of land, having an interesting geological history. Situated along the west bank of the Mississippi River, about four miles south of Muscatine, this area of about 150 sq. mi. has the appearance of a former lake bed. It is quite flat and without prolific vegetation owing to its sandy soil. A slough of the Mississippi River forms its northern and western boundary. Water from the slough is pumped over the levee into the river.

An examination of the soil reveals a layer of decayed vegetal matter of a depth of 6 to 18 in., followed by a layer of sand which contains increasing quantities of gravel at greater depths. The deposit has a total depth of about 65 ft. and averages about 85 per cent sand and 15 per cent gravel. The sand is clean and free from clay or shale with only a trace of limestone present. The gravel is hard, consisting largely of granite pebbles, flint, and quartz. No difficulty is experienced in meeting the state specifications.

James Lees, assistant geologist of Iowa, states that Muscatine Island was formerly the bed of the Mississippi River, having been cut to a greater depth than farther north. When the Illinoisan glacier passed westward, the river was shifted to the present location of Muscatine Island, carrying with it the waste material from the Wisconsin and Iowan glaciers, forming the present deposit of sand and gravel.

Effort was made, in the design of this plant, to eliminate unnecessary handling of material. In this locality, where large quantities of sand are pumped in order to recover the gravel, it is frequently necessary to maintain large stockpiles of sand when shipments are largely gravel. Obviously, the best method would be to screen out the sand at once, handling it no further after dredging, unless orders are received for it. An examination of the flow

First operating position of dredge showing discharge pipe-line to plant.



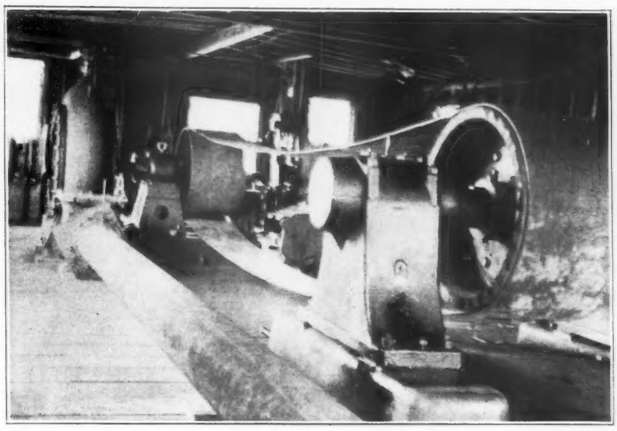
Dredge with suction pipe raised.

sheet will reveal how this method has been carried out.

The dredged material is discharged to an overhead box to reduce velocity. The sand and gravel flows over a declined screen, protected by a grizzly, allowing the sand to drop through the screen to a sump. The sand screen is the dividing line of the plant. No sand is carried with the gravel on the conveyors or through the vibrating screens. It is handled separately from the sump below the sand screen, being pumped either to stockpiles or to a booster pump which, in turn, pumps the material to settling tanks preparatory to shipment.

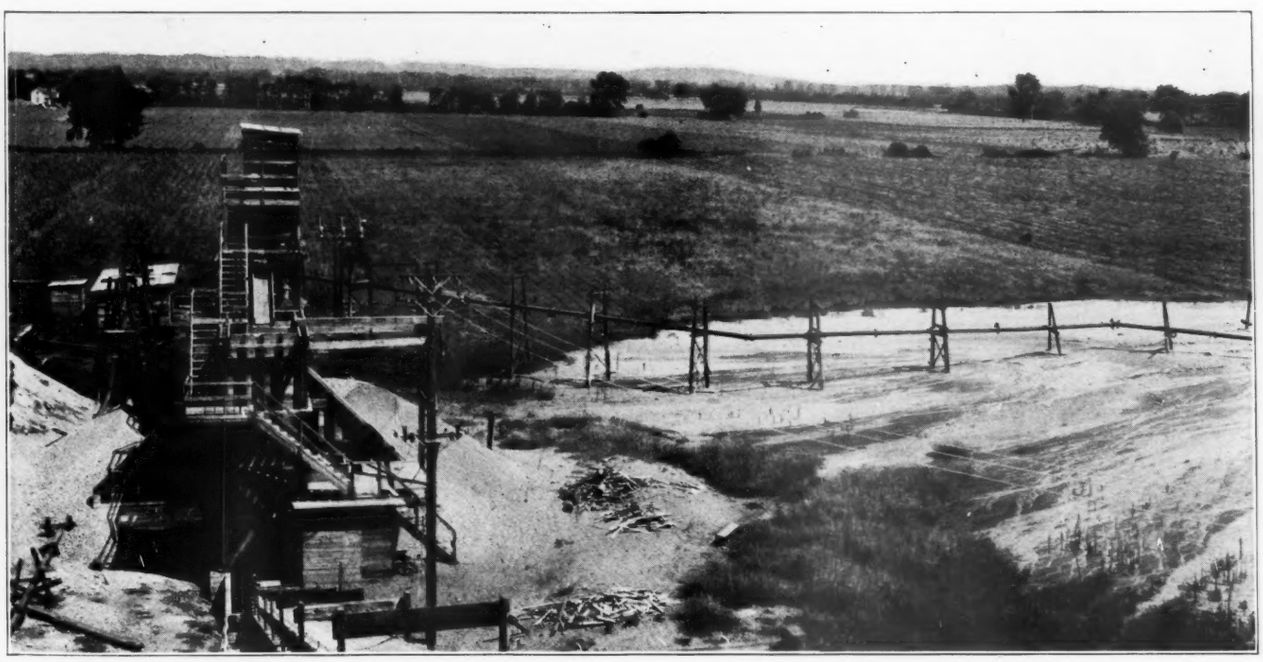
The gravel, having passed down the sand screen, flows to a belt conveyor which carries it to a vibrating screen located over the stockpiles. This screen separates oversize gravel and permits stockpiles of standard size gravel to accumulate beneath. A tunnel conveyor beneath the stock-pile conveys the gravel to the classifying screens and loading bins. The oversize gravel is crushed—after a sufficient quantity is accumulated in a storage bin—dropping down to the tunnel conveyor which carries it to the classifying screen. The conveyors and screens in this arrangement, handling only gravel, operate more efficiently.

Unusual sturdy construction is a feature of the dredge. It is of timber construction, built on the job by the company's men. It is 24 ft. wide and 60 ft. long. The gunwales are built up of 6-in. by 16-in. timbers in full length of 60 ft., eliminating splicing of shorter timbers. The bulkheads are also 6-in. by 16-in. timbers, 24 ft. in length. The hull is well braced by lateral beams and cross beams, insuring rigidity and freedom from excessive vibration. The deck and bottoms are made of 3-in. by 12-in. decking.



Interior of dredge.

The mechanical detail of the dredge centers about the 12-in. pump and its motor and control apparatus. The pump is a Diamond, made by the W. H. K. Bennett Co., mounted on one end of the barge. It has a straight discharge carried on floating pontoons. The suction pipe extends to a swivel joint and a 90-deg. elbow with a 40-ft. length of pipe ex-



Gravel stock-piles, tunnel conveyor, oversize-gravel storage bin and sand stock-piles.

Discharge box, showing sand screen and sand sump beneath.

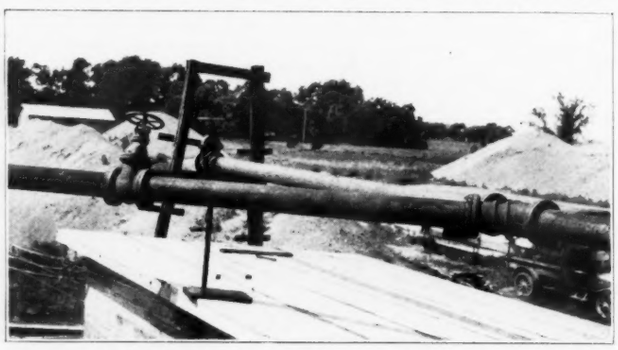
tending down to the deposit. No cutting chain is required and no hydraulic pressure streams are used, as the banks avalanche freely.

The pump is belt-driven from a Crocker-Wheeler 300-hp. induction motor controlled by a General Electric resistance-type starter. The belt is a 24-in. three-ply leather belt on a 35-in. driver and a 38-in. driven pulley, 20 ft. on centers. As the impellor of the pump wears, speed changes are made by replacing the size of the driven pulley. Several sizes are carried in stock. Priming of the pump is done by means of a Dayton-Dowd 2-in. centrifugal pump and a Penberthy XL96 ejector. The pump also supplies cooling water to the main bearing of the Diamond pump. A Stroudsburg Engine Works winch with a Western Electric 20-hp. motor controls the suction pipe position. The dredge is shifted by means of four small hand winches on the corners of the dredge with cables leading to land anchors.

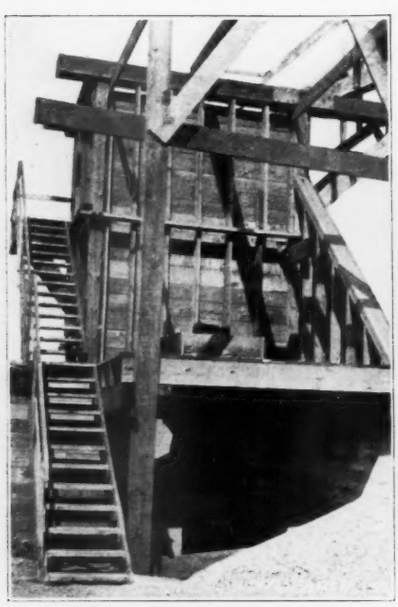
The dredge discharge pipe-line is carried to the shore-line on oil-drum pontoons. A straight-line run is maintained whenever possible, depending on the position of the dredge. Forty-five-degree elbows only are used in each direction change of the pipe line.

The actual discharge is made into the bottom of an overhead box fitted with a baffle bed of steel rails and a swinging gate. As the material comes out of the discharge pipe, it strikes the bed of rails which is placed at a sharp angle, deflecting upward through the swinging gate and down to the grizzly protected sand screen. The swinging gate serves to check violent surges of water and material. The discharge box is of wooden construction and is 4 ft. wide, 7 ft. long and 7 ft. 6 in. deep, and is about 15 ft. above the ground.

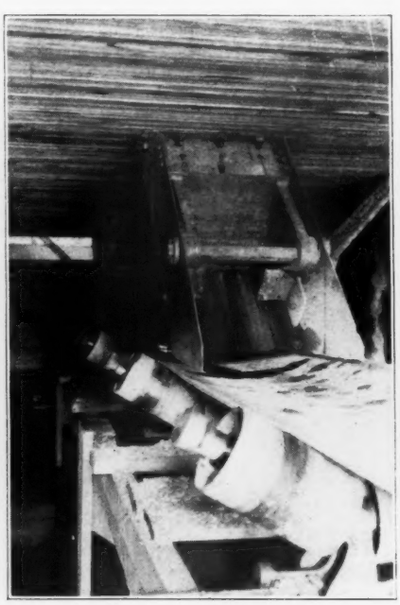
Sand and gravel separation takes place on the declined sand screen. It is 4 ft. wide and 16 ft. long with 3/16-in. mesh. The screen is of interest in its construction. It is made of piano wires laid in the direction of the flow, reinforced by perpendicular wires on its under side. The reinforcing wires are welded to the piano wires, forming an unusually strong mesh. The grizzly protection is built of ¾-in. steel rods spaced to allow 1-in. openings. Considerable wear and abuse are prevented by the use of this grizzly. From the screen the sand and water drops into an open-top steel sump 12 ft. by 14 ft. by 8 ft. deep. It is built of ¼-in. steel plate with 2½-in. angle-iron framing and bracing. The sump is set about 6 ft. into the ground.



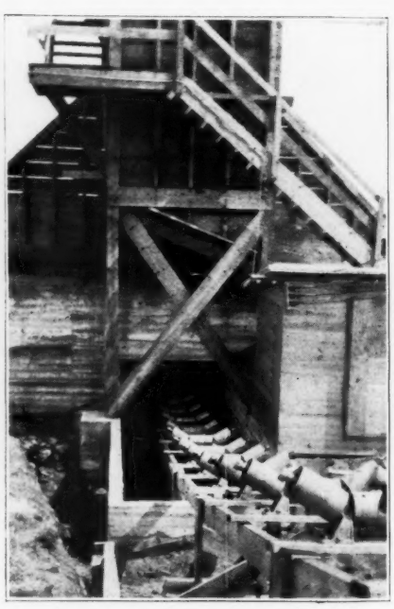
Sand pipe-line branch to stock-pile and to booster pump.



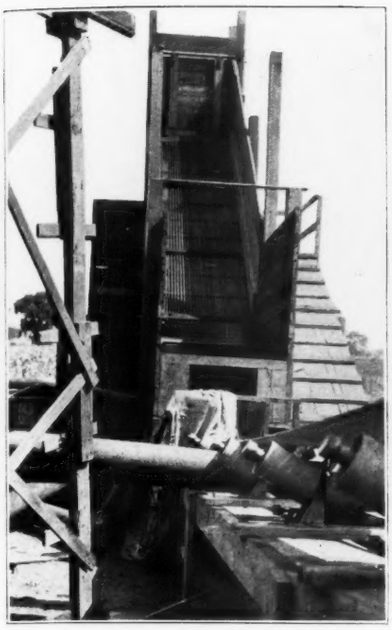
Oversize-gravel bin and crusher.



Stock-pile tunnel conveyor.

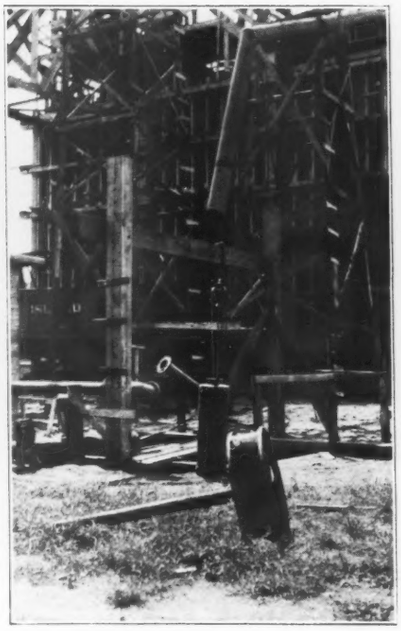


Entrance to stock-pile tunnel.



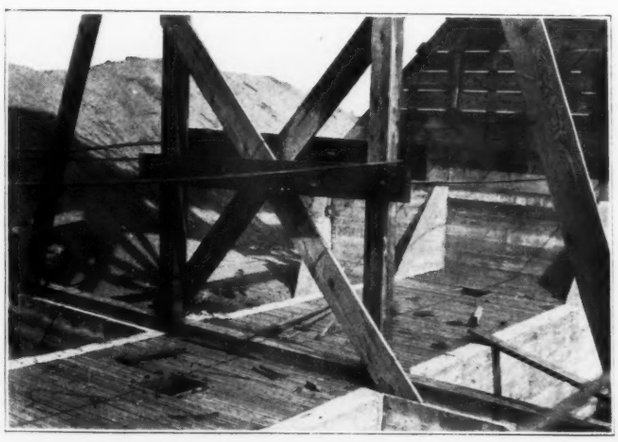
Piano-wire screen with grizzly protection.

Louis Hawks, foreman.



Booster sand-pump sump.

At this point the sand is separated from the gravel-handling machinery entirely. Sand handling will be described later. From the sand screen all material not passing through it flows down the screen to a belt conveyor, where it is elevated to a Universal 4-ft. by 6-ft. vibrating screen equipped with 1½-in. mesh, belt-driven from an Allis-Chalmers 1½-hp. motor. The Universal screen serves to separate oversize gravel. The conveyor is Cincinnati Rubber Co. 24-in. rubber belting traveling on Weller idlers and pulleys, and is 150 ft. on centers. It is driven by a General Electric 20-hp. motor through a Link-Belt enclosed-chain drive. While the general average of the gravel is well below the Iowa specification of 1½-in., enough oversize pebbles and flat stone are accumulated to make it profitable to crush.



Roof of stock-pile tunnel showing dumping-gate openings.

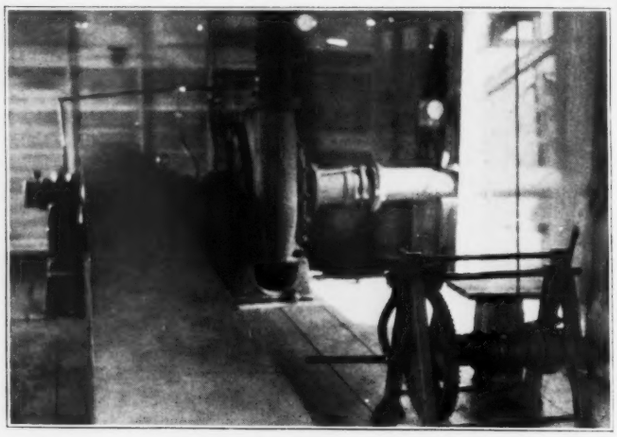
To gather the oversize gravel a large bin was built adjacent to the Universal screen, feeding directly to the spider of the crusher which is located near ground level. The bin is of timber construction, 7 ft. by 10 ft. 6 in. by 15 ft. deep. The bottom of the bin is pitched to the discharge gate to assist the flow of material to the crusher spider. An Austin No. 4 crusher, belt-driven by a General Electric 30-hp. motor, is used to crush the oversize material. It is mounted on a heavy concrete foundation designed to permit easy access to the bottom of the crusher for overhauling purposes. The crusher discharges directly to the tunnel conveyor, passing on to the classifying screen.

The gravel passing through the oversizing screen falls to stock-piles beneath. During the night shift, movement of the gravel stops at this point, all oversize material from the screen being held in the storage bin to be crushed the following morning.

The stock-pile of gravel is handled by means of a tunnel conveyor. This new method of handling is generally conceded to be practical and economical. The initial investment is small, being the cost of the concrete walls and floor. The ceiling is made of planking with opening for the dumping gates. The

Oversize-gravel crusher showing discharge to loading-bin conveyor.

tunnel conveyor carrying the stocked material to the classifying screen is necessary in any method of handling gravel to screens located above the car-loading bins. The conveyor is also a Cincinnati Rubber 24-in. belt traveling on Weller idlers and pulleys and is 230 ft. on centers. It is powered by a General Electric 30-hp. motor with Link-Belt enclosed-chain drive running in oil. Four hand-operated dumping gates mounted on the plank ceiling of the tunnel feed the conveyor as required.

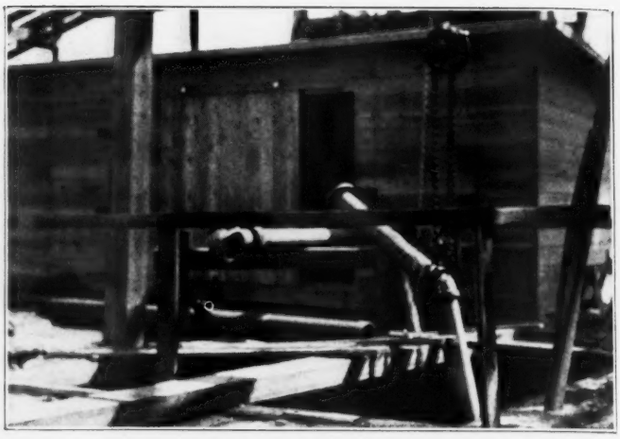


Interior of sand-pump house.

The tunnel conveyor feeds the two Universal classifying screens located above the carloading bins. The screens are of double-deck construction, the upper having ¼-in. mesh, the lower ⅛-in. mesh, and material flowing over each is guided into separate bins beneath. Undersize material passes to the sand-settling tank through a wooden flume. Fresh water from a well located near the carloading bin is pumped to a nozzle mounted over the top head of the screen to assist in the screening and washing of material.

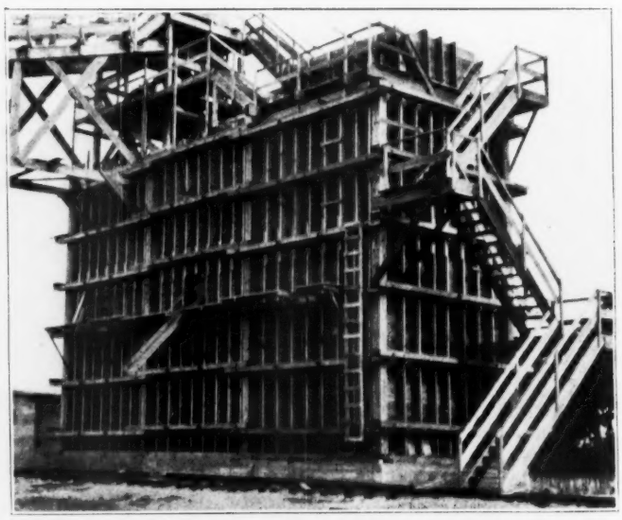
The well that provides water for screening is an 8-in. hole, 40 ft. deep with an 8-in. casing. A Chicago Pump Co. 4-in. single-stage, double-suction, centrifugal pump driven by a General Electric 40-hp. motor handles the water at the rate of 700 g.p.m. It is located in a small frame pump-house.

Double-deck classifying screen.



Sand booster-pump and sump in foreground.

Because of the large volume of sand pumped in order to recover the gravel it is necessary to maintain large stock-piles of sand. Pumping has been found the most efficient method of handling the material; and, accordingly, an 8-in. sand pump is located adjacent to the steel sump in which the sand is collected from the sand screen. This unit is permanently mounted in a frame building, the interior of which has all the appearance of a dredge. The suction pipe extends out to the sump where it is guided by a cable block controlled from a winch inside the pump house. The sand pump is a Diamond



Car-loading bins with sand-settling box above.

8-in., made by the W. H. K. Bennet Co., belt-driven from a Westinghouse 150-hp. motor through a 16-in. double-leather belt 19 ft. on centers.

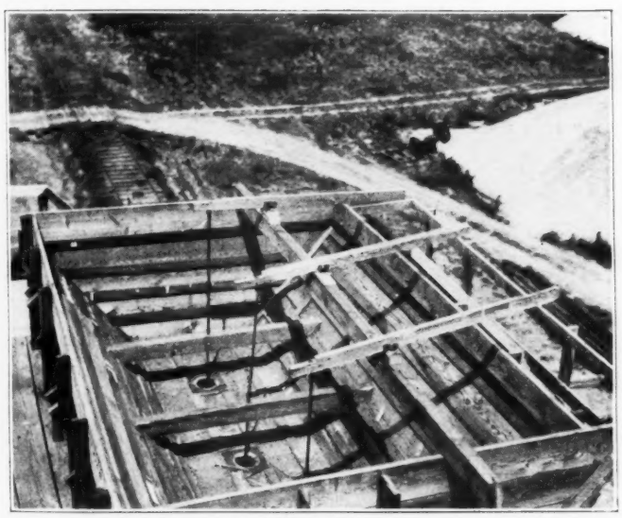
An Economy 2½-in. single-suction, centrifugal pump, direct-driven by a Crocker-Wheeler 3-hp. motor is used to prime the sand pump.

The Diamond pump discharge pipe extends through the roof where it is valved into two directions, one to the sand stock-piles on the east side of the plant, and the other to a booster pump near the car-loading bins. When orders are largely gravel,

Fresh water pump with suction pipe in foreground.

the surplus sand is valved off directly to the stockpile. When sand is needed for shipment, the discharge line is valved to the sump of the booster pump.

The booster pump is permanently located in a frame pump house near the carloading bin about 100 yd. from the sand pump. It receives its sand from a wooden sump pumping it direct to the settling tank located on the carloading bin. The entire unit is similar in construction to the first sand pump, being an Amsco 6-in. pump, belt-driven from a General Electric 100-hp. motor.

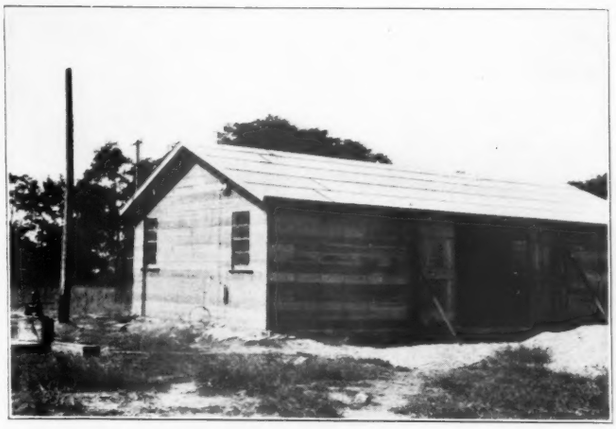


Sand settling box.

The settling tank is of wooden construction, square in shape with sloping sides. Three lever-operated valves allow the sand to flow down to the sand-loading bins.

The new plant is operated throughout the night shift by but two men. The dredge is designed to be handled easily by one operator. Sand and gravel pumped by the dredge are separated at the sand screen where another pump operator pumps the accumulated sand from the sump to the stockpiles. All the gravel flowing over the screen is conveyed to the oversize screen, where material passing through is stocked, and oversize pebbles retained in a storage bin. The balance of the plant operation, including crushing of oversize gravel, classifying of material, and carloading, is left to the day crew, which consists of twelve men.

The new plant was designed by the engineering department of the W. H. K. Bennett Co. Completed on July 15, 1930, it is the second unit operated by the Automatic Gravel Products Co., and is located in the center of an area comprising 123 acres, having an estimated depletion in 20 years.



Tool storage and repair shop.

Officers of the Automatic Gravel Products Co. are D. S. Block, president; F. O. Block, vice-president; D. G. Asthalter, secretary, treasurer and general manager. The plant foreman is Louis Hawks.

Valuable Nevada Silica Sand Deposit to Benefit Western Glass Plants

Considerable interest has lately been manifested in certain glass-sand deposits in Clark County, southern Nevada. One deposit is in the form of a cross-bedded sandstone and is said to be very extensive. Analyses submitted to the U. S. Bureau of Mines, Dept. of Commerce, indicate a silica content of 98.90 per cent, iron oxide 0.05 per cent, alumina 0.65 per cent, and lime, 0.05 per cent. Such sand is suitable for the manufacture of many types of glass, and several thousand tons of the sand are being sold annually to glass factories in California. Recently attention has been directed to a reported deposit of high-grade glass-sand near Steamboat Springs south of Reno in Washoe County. The deposit is as yet unused, and no analyses are available.

Until recent years the Pacific Coast glass factories have obtained nearly all of their supplies of glass-sand from Belgium because of a shortage of suitable domestic materials in available locations. During the past two or three years much progress has been made in the purification and treatment of California glass sand to render it suitable for the manufacture of many types of glass.

The development of glass-sand deposits in the western states and the perfecting of methods for their purification and treatment should gradually lead to lesser dependence on foreign supplies and a desirable wider utilization of domestic sands.

Sand-and-Gravel Plant Loads Materials in Any Specified Proportions

New Texas Operation of Gifford-Hill Co. Also Employs Unusual Washing Facilities

By W. E. TRAUFFER

THE Gifford-Hill Co., one of the largest and most progressive producers of sand and gravel in the Southwest, is operating a new plant near Texarkana, Tex., which went into operation on March 1 of this year. This is one of five new plants which started production during the past year within a distance of 150 miles. The plant has a capacity of 2,000 tons in a 10-hr. day and is built entirely of creosoted timber with concrete foundations and footings. It was designed by the company's own engineers.

The property of 500 acres owned by the company is located 7 miles southwest of Texarkana, which is on the state line between Texas and Arkansas. About 75 of the 500 acres is a gravel deposit which averages 12 ft. in depth with a 6-ft. overburden. The deposit runs 50 per cent gravel and 50 per cent sand.

The overburden is removed and the gravel recovered by a P&H 600 gasoline dragline with a 1-cu. yd. Page bucket, and a Bucyrus-Erie 50B electric dragline with a 2-cu. yd. Page bucket. These load into a train of 12-cu. yd. Western side-dump cars which is hauled by a Cooke 65-ton oil-burning steam locomotive.

The cars are dumped at the plant through an 8-in. rail grizzly into a 50-cu. yd. capacity W-shaped timber hopper. This hopper is patterned after a similar one at the Dallas plant of the Gifford-Hill Co., which was designed by the W. H. K. Bennett Co. Its unusual capacity is more than sufficient for a trainload of material and insures a constant flow to the plant while the train returns to the pit for another load.

The two rows of 3 Link-Belt quadrant gates under the hopper discharge from both sides to a 30-in. feeder belt conveyor on 20-ft. centers in a concrete pit. These gates are controlled by one man and their arrangement allows a steady discharge to the feeder. The feeder belt discharges to a 30-in. inclined conveyor on 320-ft. centers to the screening plant. This conveyor is driven by a 25-hp. Westinghouse motor through a Link-Belt silent-chain drive. The feeder conveyor is chain-driven from the tail pulley of the main conveyor.

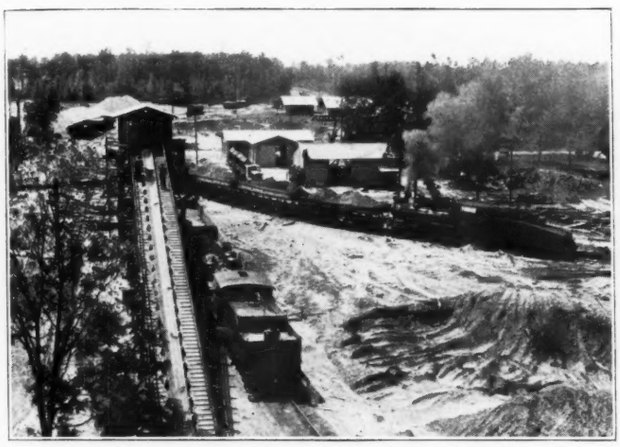
The conveyor discharges through a split chute into two sets of four Link-Belt 8-ft. Dull conical screens. Each set of four screens has ⅜-in., ½-in., 1-in., and 2-in. perforations. A 3-in. scalper in each of the 2-in. screens wastes any material over that

Screening building and track hopper (rear) and loading building.

Electric dragline loading gravel into 12-cu. yd. side-dump cars.

Gasoline dragline at the road pit.

size. The four sizes of gravel are chuted directly into bins while the ⅜-in. and under from the last pair of screens goes to four Link-Belt Dull sand cones for masons' and plaster sands. When clay is



Loading building, machine shop, and employees' homes, as viewed from atop the screening building.

encountered in the deposit, the flow of sand can be diverted to a 22-ft. Link-Belt paddle wash-box with 4-ft. paddles.

One of the sets of four screens is driven by a 15-hp. Westinghouse motor and the other by a 20-hp. Allis-Chalmers motor, both through Link-Belt silent-chain drives.

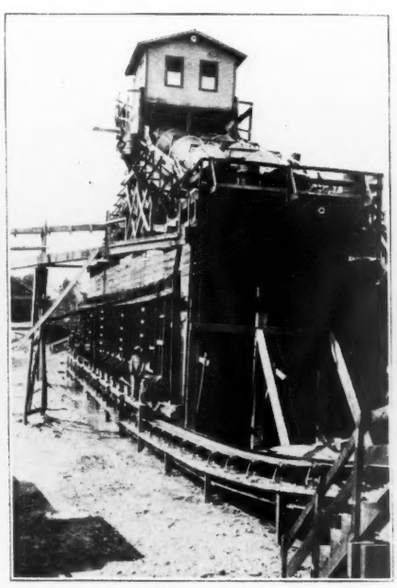
The seven-compartment timber bin has a total capacity of 700 cu. yd. Each of the two bins containing sand has two drop-chute gates on one side which allow sand to be loaded without further handling. All of the bins discharge through Link-Belt gates on the other side onto a 30-in. belt conveyor on 225-ft. centers. This runs horizontally under the bin gates and on an incline to the rewasher building. In this manner any desired size or mixture of sizes can be loaded.

This conveyor discharges into a 42-in. by 10-ft. Stephens-Adamson rotary washing screen with ¼-in. perforations. The washed and screened gravel discharges through two drop-chute gates into cars. When sand is being loaded it by-passes the screen and is chuted directly into cars.

This conveyor is driven by a 30-hp. Westinghouse motor through a Link-Belt silent-chain drive and has a Link-Belt automatic friction brake, which would prevent reversing of the conveyor under load should the power fail or a breakdown occur. The washer screen is chain-driven from the conveyor head pulley.

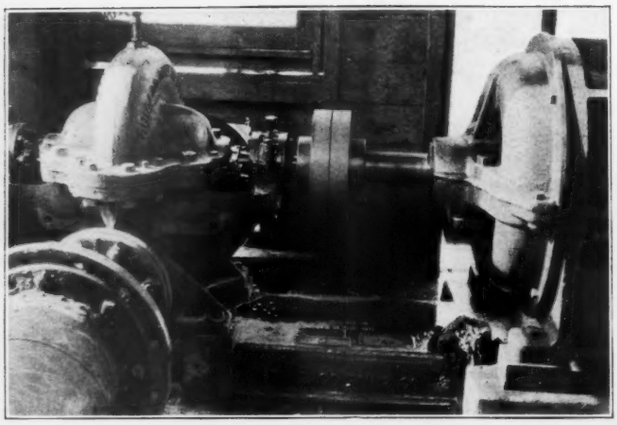
An American 80-ton oil-fired steam locomotive spots cars for loading and does all switching. Ship-

Main conveyor, track hopper to screening building.



Screening building, showing conveyor, gates and screens.

Close-up of one of the four sand cones.



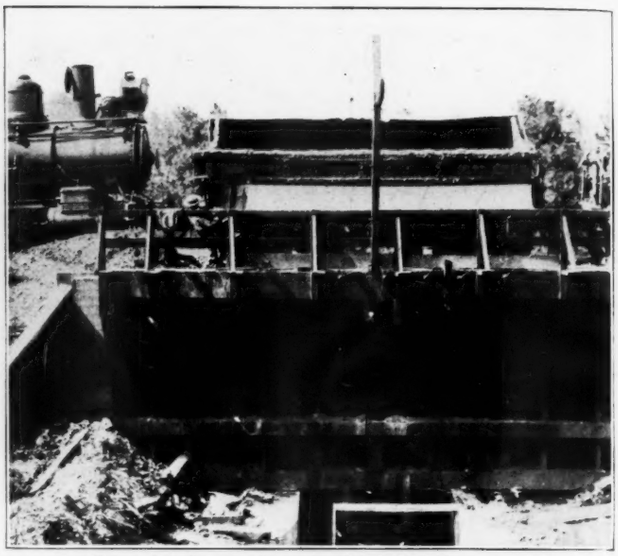
Motor direct-connected to centrifugal pump with 6-in. discharge.

ments are made over the Cotton Belt Ry., which is connected with the plant by a ¾-mi. switch-track. All stockpiling is done by a Lidgerwood steam whirley, handling a Williams 1½-cu.yd. clamshell bucket.

Washing water for the plant is furnished by a Chicago Pump Co. centrifugal pump with 8-in. suction and 6-in. discharge. This is located in a concrete and wood-frame house near the plant hopper and is driven by a 60-hp. General Electric motor. The water line to the plant is Taylor spiral pipe.

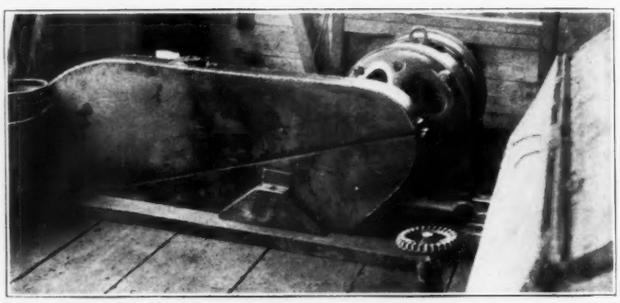
Dodge-Timken conveyors are used throughout but several makes of conveyor belting are used. The feeder belting was furnished by the New York Belting and Packing Co., that on the main conveyor by the Cincinnati Rubber Co., and that on the conveyor to the rewashing plant by the Goodyear Tire & Rubber Co. All of the electric motors and equipment are Westinghouse with the exception of a few Cutler-Hammer push-button switches and Trumbull safety switches. Youngstown Sheet & Tube Co. Buckeye conduit and Appleton Electric Co. unilets are used. The draglines and all parts of the plant are equipped with Westinghouse 1,000-watt floodlights for night operation.

The unprecedented floods in the middle of May which caused a great deal of damage to other plants in this part of the country, especially to dredging operations in southwestern Arkansas, caused a shutdown of less than three days here. This was not due directly to the floods, as the plant is not near



Car unloading to hopper which feeds conveyor.

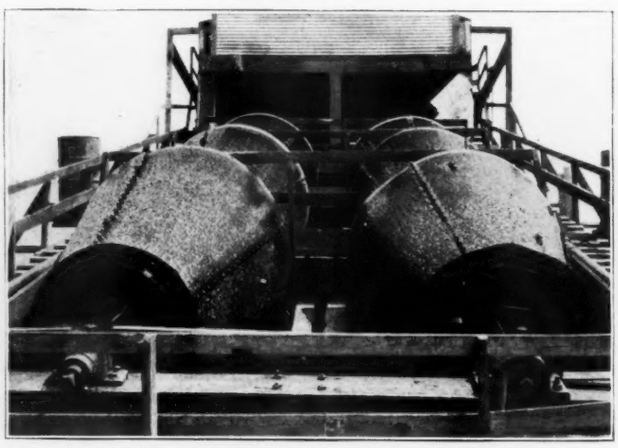
a river, but to the torrential rains which came down for more than a week without a letup. In three days, May 16, 17 and 18, it rained over 11 in. in this vicinity.



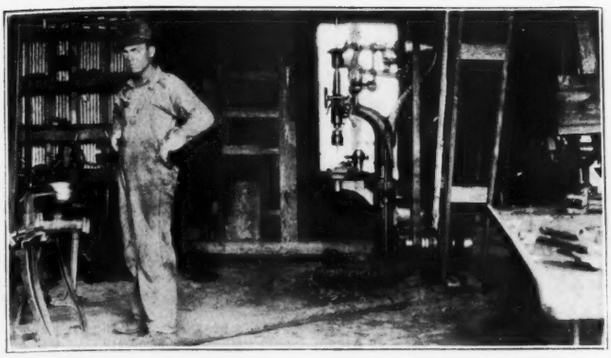
Motor and silent-chain drive for sizing screens.

The only actual damage was the washing away of a concrete spillway which impounded the wash-water for the plant. This has since been rebuilt and its loss has been more than compensated by the rush of orders following the flood, due to the extended shutdown of all other plants in this section. This rush made it necessary to operate the plant 24 hours a day for several weeks.

Screening building from southeast.



Close-up of revolving sizing screens.



Interior of machine shop, showing hacksaw, drill-press and emery wheel.

Practically all repair work is done in a well-equipped machine and blacksmith shop. This is a neat frame and corrugated-metal building near the plant. Equipment includes a Monarch 16-in. bed lathe, a Hoefer 20-in. drill-press, a Greenfield bolt threader, a power hack-saw, and an emery wheel, all of which are belt-driven from a line-shaft. There are also an American forge and blower and a Bastian-Blessing Co. oxy-acetylene cutting and welding outfit with a Rego Type A acetylene generator, made by Kentucky Oxygen & Hydrogen Co.

A. L. Farr is superintendent of the new plant and J. A. Whyte is general superintendent of all operations of the company in the vicinity of Texarkana. These include a ballast pit on the T. & P. Ry., near Texarkana, which was first operated by the railroad forty-two years ago, and a road-gravel plant at Hoot, a few miles from the new plant. A P&H 600 gasoline dragline excavates the material which is washed over a flat screen. A Baldwin 60-ton steam locomotive does the switching. A ballast-washing plant will be erected here later this year.

The main office of the Gifford-Hill Co. is at Dallas, Tex. In addition to the Texarkana operations, the company operates sand-gravel plants at Waco, Fort Worth and Dallas, Tex., and Forest Hill, La.; and a crushed-stone plant at Allamore, near El Paso, Tex. Officers of the company are: P. W. Gifford, president; J. Rutledge Hill, vice-president; H. Whyte, secretary; H. M. Lacey, treasurer; and H. M. Dodds, general manager.

Gasoline dragline rebuilding spillway after the flood.

Indiana Plant Operates Entire Year Despite Weather Conditions

(*Continued from page* 43)

The long belt conveyor elevates to a Gilbert 84-in. screen with a jacket for separating out three sizes of stone: 1-in. to 2-in.; ¾-in. to 1-in.; and ¼-in. to ¾-in. This screen is equipped with a Columbia scrubber barrel that can be used if the material needs extra washing. A second 84-in. Gilbert screen separates out the sand and discharges into a Stephens-Adamson settling tank that washes out the dirt and foreign material.

Screening-and-washing plant, the conveyor at left bringing material from crusher and scalping screen, while the conveyor at right stock-piles the surplus.

The various sizes of stone and sand are discharged to overhead delivery bins for gravity discharge to motor trucks; or the different sizes can be carried to ground stock-piles by means of two Dodge belt conveyors, one 24 in. wide on 40-ft. centers, and the other 18 in. wide by 50 ft. long.

Water for washing is pumped from a 12-in. well, 170 ft. deep, by a Sterling 7-in. deep-well pump, delivering 600 gal. per min.

The overhead delivery bins are equipped with both Stephens-Adamson swinging-quadrant bin gates and C. A. Johnson Co. batch-hopper gates. For ordinary sand and gravel delivery, the 7-in. by 12-in. quadrant gates are used. For state and county highway deliveries, the materials are measured and delivered in batches proportioned according to the specifications for the jobs.

When delivery is made from ground stock-piles, a Barber-Greene portable belt conveyor loads the trucks.

Although all delivery is made by motor truck, the Christman plant does not own or operate a single truck. A local trucking firm, the Freeman-Zimmer Co., has contracted to haul material and charges only for the actual yardage handled. This system seems to be working out satisfactorily and, in this case, is much more economical as there is no overhead to be charged to idle trucks.

Julius B. Christman is general superintendent in charge of the operation and Eph. Kindig is the plant superintendent.

U. S. Dept. Conducts Strength Tests on Concrete Road Designs

To determine the relative efficiency of several designs of concrete pavements and to develop more exact knowledge of the amount and distribution of stress in pavement slabs resulting from loads applied to them in various positions, the Bureau of Public Roads of the U. S. Dept. of Agriculture is constructing numerous full-size concrete pavement slabs at the experiment farm of the department at Arlington, Va. The slabs will later be subjected to an elaborate series of tests.

Some slabs will be of uniform thickness throughout. Tests on these are expected to furnish information regarding the relation between loads applied at various points and the stress and strain of the concrete at all points in the loaded cross-section, and the relation between load resistance and slab thickness.

Other slabs will be thickened at the edges and for a certain distance from the edges in accordance with the different designs now used in several states. In some slabs the thickening will be provided by excavating the subgrade under their edges. In others the surface of the concrete slab will be raised at the edges so as to form a low, rounded lip curb. In still others the lip curb will be combined with a thickening of the edge of the slab at the bottom. Observations of these sections will furnish information regarding the relative load-resisting properties of designs now in use in various states.

The test slabs, which will be 20 ft. wide by 40 ft. long, will have central longitudinal and transverse joints. The object of one test is to determine the efficiency of various methods in use for transferring load across these joints.

Other experiments will include bond tests of dowel bars to determine the length of embedment necessary; the measurement of subgrade friction, with particular attention to the effect of edge thickening of transverse joints on resistance to the sliding of the slabs on the supporting surface; and the measurement of the movement of the slab in the subgrade as a result of temperature and moisture changes.

The work of constructing the slabs has begun, and the concrete will be laid in late summer. The tests will be under way in October when they may be observed by engineers from all parts of the world who will be in Washington, Oct. 6 to 11, to attend the Sixth International Road Congress, at the invitation of the U. S. Government.

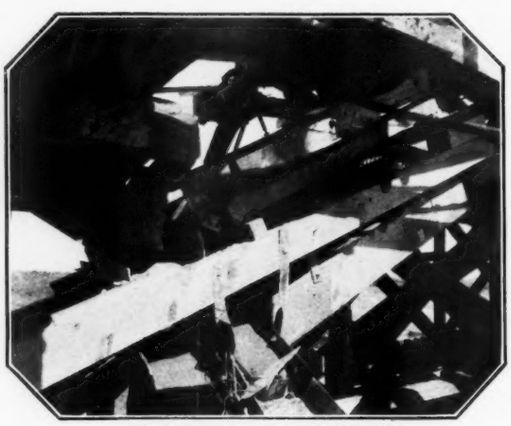
The results of this research will prove of inestimable value to road builders everywhere. State, county, and city officials who have new roads or streets to be paved, or who face the replacement of existing pavements, will do well to watch the outcome of these experiments.

Continuous Service

Six months ago the Dallas Washed and Screened Gravel Company of Dallas, Texas, purchased a 4x7 single Leahy Vibrating screen, and installed it in their plant at Clowdy, Texas. This Leahy has been giving practically continuous service ever since.

About two months ago they installed a secondary screen on this vibrator, and have been successfully screening materials over the 3/8-in. square opening screen and then over the 1/4-in. opening screen. Good quality gravel from 3/4-in. to 1/4-in. is produced, and the sand originally in this material is put into their regular run of sand.

The Leahy No-Blind Vibrating Screen guarantees quicker handling of sand, gravel, rock, etc., and gives closer sizing at lowest ton cost. Entirely fool-proof—very low upkeep cost. Send for full details.



"LEARN FROM LEAHY USERS WHY THE LEAHY LEADS"

The Leahy

See P&Q HAND BOOK Page 226

The Deister Concentrator Co.
Incorporated 1906
901 Glasgow Ave. :: FORT WAYNE, INDIANA
Foreign Sales: 104 Pearl Street, New York, N. Y.

Accident-Prevention Problems Involved in Sand-and-Gravel Operations

By W. DEAN KEEFER
Director, Industrial Safety Division, National Safety Council

SAND and gravel operations rank among the most essential industries in our present "concrete age," since sand and gravel are finding increasing use in concrete construction for streets and roads, for modern buildings of all kinds, and for many other purposes.

It is unfortunate that the sand-and-gravel industry is also classified, by experts in the casualty-insurance field, as one of the most hazardous of our important industries. This statement can be made only in a general way, because this industry is one of the few important industries of the country pertaining to which no detailed and continuous accident investigations have been made.

It is true that a good many sand-and-gravel companies appreciate the efficiency and humanitarian value of systematic accident-prevention work and are conducting consistent safety programs. But no general accident-prevention program has yet been organized for any considerable portion of the industry, whereby the accident rates of the industry as a whole may be compared with such industries as cement, construction, mining, and steel.

Such basic accident statistics, when developed, will be of considerable importance to the industry, toward the possible revision of state compensation rates and insurance rates, toward a study of the relationship of plant-accident costs to other operating costs, and even toward the solution of plant employment and personnel problems relating to compensation and accident prevention.

There are a number of reasons why the sand-and-gravel industry is classified as especially hazardous. It usually represents operations on a big scale, the handling of materials in bulk, loading and unloading in car lots, steam shovels, heavy cables, big machinery, conveyors, and often hydraulic operations.

Since the handling of the product constitutes the chief part of the work of the industry, and since many of the machines are automatic in their operations, there naturally are few machine hazards. However, when accidents from such machines do occur they are apt to be severe. Many of these machine hazards and many of the mechanical hazards are in isolated spots. In general, if only a few men are needed to carry on operations, there cannot be such a close degree of supervision and the human element thus becomes a greater factor in accidents. It is the "human element," as we know, which causes a large percentage of all accidents in all industries. It is a good safety rule, for mechanical hazards in locations which few persons visit, to guard them as effectively as possible through warning signs which can easily be seen, and through locking devices which prevent the chance of starting hazardous units while they are being worked on.

One of the most important principles in accident prevention in the industry is the protection of such workers as the oiler, the millwright, and the repairmen against their own mistakes when they are required to work alone on or near dangerous places. There is usually only a slight cost in enclosing such dangerous places. The surest preventive, where it is possible and when special repair work or oiling must be done, is to provide absolute locks to all starting units, protective switches and steam valves. There is no doubt that many accidents could have been prevented through the purchase of cheap padlocks.

One reason, doubtless, for accidents in the sand-and-gravel industry is the fact that some installations are only temporary. There seems to be a tendency for makeshift equipment in some of the smaller or temporary sand-and-gravel plants or in parts of some plants. This hazard from makeshift installations is shown in the large number of injuries from falls in the sand-and-gravel industry. Falls, of course, are one of the most common hazards in all industries; but, in sand-and-gravel operations, there is unusual opportunity for loose planks, scattered material over which the worker may stumble, shifting walkways, and uneven surfaces. Many falls in the industry are attributed to these causes.

To prevent such hazards, all gravel-pit runways and elevated platforms should be equipped with substantial handrails, with toeboards and intermediate rails. Such handrails should be strengthened with diagonal braces to give added security. All runways should have treads no matter how slight the incline. It is essential that all minor breakages should be promptly repaired. Another essential is that permanent and adequate working platforms should be provided for all overhead motors, conveyor ter-

minals, and at other necessary points of inspection.

Good lighting also is an essential toward the prevention of accidents from falls. Many accidents have been caused by dim lighting, by spotty illumination at night, and especially by poor lighting of approaches. Possible falls from high structures not properly guarded is another serious hazard, and accidents are frequently caused by falling objects.

This is the electrical age as well as the concrete age, and conditions of work in the sand-and-gravel industry tend toward the creation of exceptional electrical hazards. Out-of-doors working conditions and the possibility of wet ground and wet framework permitting the establishment of electrical circuits add to the possible dangers from all electrical equipment that is not properly used or that is not kept in first-class repair.

To meet this electrical hazard, good suggestions are contained in a booklet relating to safeguards against injuries in quarries, published by the Industrial Accident Commission of the State of California in co-operation with the U. S. Bureau of Mines. These suggestions are as follows:

"Inexperienced persons should not be allowed to work with electricity.

"Poles supporting high-voltage wires, transformer houses and other dangerous electrical equipment should be amply provided with danger signs. Employees who can not read should be carefully instructed so that they will have an understanding of all danger signs, especially those warning about electricity.

"Locks, by means of which electric switches may be locked in the open position and the keys to them held by the person who is making repairs, will prevent many serious accidents from electric shock and unintentional starting of motors.

"Instructions for resuscitation of persons suffering from electric shock should be posted near all electrical equipment."

Conveyors, when used, also are one of the serious hazards in the sand-and-gravel industry. A conveyor accident is apt to be a serious one but conveyors, as a rule, may be easily guarded. A first safety rule is never to permit a conveyor to be repaired while it is in operation. Also the cleaning of belts and pulleys should not be permitted while the conveyor is in operation. When it is necessary for workmen to shovel onto a moving belt they should be advised always to face in the direction in which the belt is travelling. There have been many injuries from material falling from conveyors, and as the result of men walking on conveyors.

One special investigator in the sand-and-gravel industry has stated that there seems to be an especial number of serious accidents during the summer months. He has advanced several possible explanations as to why the months of June and July should be especially hazardous. One possible explanation is that the increasing work which usually comes during this period may not be accompanied by a corresponding increase in supervision and discipline. It is possible also that the increasing heat may lead to laxity or lassitude on the part of individual workers who are not closely supervised. It is possible also that such increased accidents may be due to the increased number of new men hired to meet the increased labor demand.

The obvious remedy for any increasing number of accidents during the summer months is to study the exact source of these accidents, and then develop the proper degree of supervision to meet any exceptional hazards which may be found to exist.

Plant railroad equipment always has been the source of many accidents in the average industrial plant. To meet this hazard a list of helpful safety suggestions, which are applicable to the sand-and-gravel industry, has been included in the tentative draft of a "Safety Manual for Quarries," which has been issued as a progress report of a special committee from the Quarry Section of the National Safety Council. Following are twelve safety suggestions:

Cross main line or incline tracks only at regular crossing. Use bridges or walkways provided.

Do not ride any equipment unless it is a part of your job. Trainmen may enforce this rule.

Switches must be locked and set for main track. Keys must immediately be returned to the locomotive.

When men are working on track, a yellow flag must be placed 300 feet on either side of working place.

When someone is under or repairing locomotive a red flag must be displayed. No coupling or moving of trains is permitted at this time.

When about to move, and while moving trains or locomotive about yards or when crossing roads, locomotive bell must be kept ringing.

When approaching crossing, sound two long and two short blasts of locomotive whistle.

When trains are moving, a trainman must be on leading car. When shunting cars in yards a trainman must be in position to signal engineer, or to control moving cars.

Cars must not be pulled out until properly loaded and platforms cleared.

All other than track locomotives—or those on extra trips not scheduled—must be unusually careful when on main track. Trainmen must determine in advance that track is clear.

Coupling is dangerous. None but experienced trainmen may do this work.

While oiling locomotive, inspect all parts and track in a general way and report defects so that you may prevent delays or accidents.

The same progress report has six safety suggestions for the use of conveyors:

When shovelling onto moving belts workman must face direction belt travels.

Do not touch or clean belts at pulleys while conveyor is in operation.

Do not repair conveyors while in operation.

Watch for material falling from conveyors.

Screw-conveyor covers must be kept bolted in place.

Men must not walk on conveyor covers under any circumstances.

MEN OF THE INDUSTRY

The portrait printed on this page in each number of PIT AND QUARRY is selected without significance as to current events or the position of the individual in the industry.

© Blank-Stoller, Inc.

L. S. BRANNON, JR.
Secretary
J. W. Brannon Sand & Gravel Co.
Denver, Colo.

Personal Mention

Francis A. Emmons, vice-president of Foote Bros. Gear and Machine Co., recently returned from a business trip to the West coast. Mr. Emmons, during the trip, contacted company representatives at Denver, Salt Lake City, Los Angeles, San Francisco, Portland and Seattle. **E. C. Wilson,** formerly in charge of the pricing group of the gear and reducer division of Foote Bros., has recently been appointed assistant sales manager. Mr. Wilson was until 1929 assistant sales manager of the R. D. Nuttall Co. of Pittsburgh, Pa.

Humphrey J. Kiely, vice-president, Link-Belt Co., in charge of the export division, announces the appointment of **William Piez,** brother of **Charles Piez,** chairman of the company, as European correspondent.

The move has been made to give closer contact to the Link-Belt agents and customers located in Europe, the British Isles and North Africa and is another step taken by Link-Belt to render a better world-wide service to its far-flung customers.

William Piez, who resigned his position as district manager of the Concrete Steel Co., Chicago, in September, 1928, has lived in Paris since that time.

Dilver Belden of Xenia, O., who purchased the W. E. Wroe gravel plant at a sheriff's sale June 28, has sold the plant to **W. H. Chadwick,** Dayton, O., who will re-open and operate the business immediately.

Loyd Wilson of Detroit, Mich., is opening a sand-and-gravel washing and screening plant at Algonquin, Mich., near Sault Ste. Marie.

Porter W. Yett, president of the National Association of Paris Transit-Mixed Concrete Manufacturers, and general manager of the firm of Swigert, Hart & Yett, Inc., of Portland, Ore., is on an extended trip to the Atlantic coast to visit various transit-mixed plants operating under the national association headquarters, which is located in Portland.

B. W. Druckenmiller has been appointed assistant general sales manager for the Pennsylvania-Dixie Cement Corp., with headquarters at 521 Fifth Ave., New York, N. Y. For the past two years he has been sales manager for this corporation and was, for sixteen years, with the Crescent Portland Cement Co., of Wampum, Pa.

R. F. Geller, recently director of research, The Abrasive Co., has returned to the U. S. Bureau of Standards with which he was formerly connected.

M. de Glopper, recently materials and equipment engineer for the state highway department at Lansing, Mich., has been appointed chairman of the American Road Builders' Assn. committee on equipment. This committee, which has done work of immense value to the road building industry in previous years, will take up in this year's agenda: snow-removal equipment; standardization of purchasing methods; operation and development of traffic-control signals for streets and highways; power requirements for operation of various types of road machinery; a survey of need for and availability of maintenance equipment; and central-mix and transit-mix concrete equipment. Chairman de Glopper will be assisted by sub-chairmen in charge of the various investigations and the entire committee membership of highway industry leaders.

R. B. Young, testing engineer, Hydro-Electric Power Commission of Ontario, has been elected vice-president of the newly organized National Ready-Mixed Concrete Assn.

R. Norris Shreve, consulting chemical engineer of New York, N. Y., has accepted an appointment to the school of chemical engineering of Purdue University, Lafayette, Ind., where he will have charge of the work in organic technology. His work, in addition to student training in industrial organic chemistry, will deal, through the Engineering Experiment Station, with industrial problems and contacts.

F. J. Selinger, Jr., has been made sales manager for the Pennsylvania-Dixie Cement Corp. Until recently he was with the Atlas Portland Cement Co. for twenty-three years. His office is at 521 Fifth Avenue, New York, N. Y.

M. L. Hartman is vice-president of the Dicalite Co., Los Angeles, Cal.

C. S. Reeve, chief chemist, development department, The Barrett Co., Leonia, N. J., has been elected vice-chairman of committee D-4 on Road and Paving Materials of the American Society for Testing Materials.

J. D. Maxcy is president of the Northwest Chemical Co., Seattle, Wash., which will develop magnesium-sulphate deposits at Oroville, Wash.

A. V. de Forest, formerly research engineer for the American Chain Co., has been appointed consulting engineer for the company. He will be associated also with the newly organized Welding Engineering and Research Co., New York, N. Y.

Anna Bart is president of the Oklahoma Natural Rock Asphalt Co., a new St. Louis corporation that proposes to obtain its raw material from mines near Ada, Okla.

K. G. MacKenzie, the new president of the American Society for Testing Materials, graduated from Yale University in 1907 and received his master of science degree from the same university in 1909. From 1907 to 1908 he was assistant in chemistry in Sheffield School, Yale University; 1908 to 1910, research chemist, the Barber Asphalt Co., Maurer, N. J.; 1910 to 1911, chemist with the Nairn Linoleum Co., Newark, N. J.; and since 1911, consulting chemist of the Texas Co.

F. S. Woods has organized the Chester Valley Lime & Products Co., West Chester, Pa., and is its president. The company will produce crushed limestone and lime products.

S. R. Ives has succeeded H. W. Rinearson as general manager of the Armco Culvert Manufacturers Assn.

Harry A. Curtis will be on leave from Yale University during the coming college year and will reside in Washington, D. C., as chairman of the division of chemistry and chemical technology of the National Research Council. During his absence, Prof. **B. F. Dodge** will serve as acting head of chemical engineering at Yale.

F. A. Rumbarger has been appointed representative of the Browning Locomotive Co. in the Pittsburgh territory.

Philip Coventry, until recently supervisor of Groveland township, has been appointed manager of the cement block plant operated by Oakland County.

Charles Koon, well known electrician of Covington, O., is in the hospital as a result of having been thrown a distance of some thirty feet by the fly-wheel of the electric motor operating the crusher. Mr. Koon was making some repairs on the motor at the time and an employee, ignorant of this fact, turned on the power. It is thought that Mr. Koon was standing on the fly-wheel at the time. Strange to say no complete fractures of bones occurred and although a mass of bruises and cuts he is now thought to be out of danger.

Obituary

A. E. Konzelman, manager of the Pittsburgh office, Good Roads Machinery Co., died July 12, at the age of 51. Death was due to a heart attack, occurring while in company with P. D. Frack, sales engineer for the company, when calling on a prospect. Mr. Konzelman had a life-time experience in engineering and construction work. He joined the Good Roads Machinery Co. Jan. 1, 1929.

Coming Events

Sept. 29-Oct. 3, 1930, Pittsburgh, Pa. Annual congress and exposition. National Safety Council, William Penn Hotel. W. H. Cameron, managing director, 20 N. Wacker Drive, Chicago.

Sept. 9, 1930, Seattle, Wash. Portland Cement Association regional safety meeting, at New Washington Hotel. A. J. R. Curtis secretary, 33 W. Grand Ave., Chicago, Ill.

Sept. 9, 1930, Chicago, Ill. Regular meeting, Gypsum Assn., Bismarck Hotel. Henry J. Schweim, executive secretary, 211 W. Wacker Drive, Chicago, Ill.

Sept. 14-20, Springfield, Mass. Fourteenth annual Eastern States Exposition. Industrial Arts Exhibition in connection.

Sept. 16, 1930, San Francisco, Cal. Portland Cement Association regional safety meeting, at St. Francis Hotel. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Sept. 18-19, 1930, Chicago, Ill. Annual meeting, Manufacturers' Division, National Sand and Gravel Assn. at Stevens Hotel. V. P. Ahearn, executive secretary, Munsey Bldg., Washington, D. C.

Sept. 23, 1930, Ogden, Utah. Portland Cement Association regional safety meeting. Hotel Bigelow. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

October 6-10, 1930, Washington, D. C. Sixth International Road Congress at invitation of the United States Government. Thos. H. McDonald, chief of the United States Bureau of Public Roads, secretary-general of the American Organizing Commission. International Road Exposition in charge of the American Road Builders' Association. Charles M. Upham, engineer - director, National Press Bldg., Washington, D. C.

Nov. 17-19, Chicago, Ill. Annual meeting, Portland Cement Association, at Blackstone Hotel. Wm. M. Kinney, secretary, 33 W. Grand Ave., Chicago, Ill. (Open to Association members only.)

Dec. 1-5, 1930, Memphis, Tenn. Ninth Annual Asphalt Paving Conference of the Asphalt Institute. Meeting of the Association of Asphalt Paving Technologists in conjunction.

Dec. 1-6, 1930, New York, N. Y. Ninth National Exposition of Power and Mechanical Engineering, to be held at Grand Central Palace. I. E. Moultrop, chairman.

Jan. 19-22, St. Louis, Mo. Annual Convention National Crushed Stone Assn., Hotel Jefferson. J. R. Boyd, secretary, 1735 14th St., N. W., Washington, D. C.

Jan. 27-29, 1931, St. Louis, Mo. Annual convention National Sand & Gravel Assn., Hotel Jefferson. V. P. Ahearn, executive secretary, Washington, D. C.

Feb. 24-27, 1931, Wichita, Kan. Sixth Annual Southwest Road Show and School, Exposition Building. F. G. Wieland, manager, P. O. Box 1043, Wichita, Kan.

July 17-Aug. 28, Atlantic City, N. J. American Fair, featuring road building, at Auditorium. P. F. Seward, American Road Builders' Assn., Washington, D. C.

National Power Show Becomes Pageant of Progress in Mechanical Engineering

Under the leadership of I. E. Moultrop, chairman, preliminary details of the Ninth National Exposition of Power and Mechanical Engineering to be held December 1 to 6, in Grand Central Palace, New York, N. Y., are well under way. It has been stated by the committee in charge that the problem of finding space for new exhibitors who are planning to come in is a real one, and that the Grand Central Palace will be crowded.

Business conditions, in general, are such as to make a show of more than usual value. In the first place, a larger attendance than ever is expected because the average executive feels the need for keeping up to the minute in all methods of economy.

That power is the source of all wealth in the final analysis is a fact that the manufacturer who is turning it into the products that we use daily realizes and he is realizing it more and more intelligently each year, as the economies that have been effected by those who have equipment to sell has been translated into dividends for such manufacturing concerns as have been keen enough to adopt new devices and improved methods.

When the first Power Show opened its doors nine years ago, for instance, the use of pulverized coal was in its infancy and the field was divided in opinion relative to its use. Yet today we learn that, in the electric and public-utility plants of this country alone, there is being burned each year 7,112,739 tons of coal in pulverized form in those queer devices that were first shown at the first and subsequent National Power shows gathering crowds around the booths where the equipment was looked upon as a curiosity in 1921. The six-days' wonder is over and equipment that was a real "show" in itself in 1921 is an old story today. When the first Exhibit was held, high pressures were spoken of—we used to have tall buildings, at least sixteen to twenty stories high, but today we have 70- and 85-story buildings—and so we have instead of 300- to 400-lb. pressure on the modern boiler, 1,400-lb. pressure today. These things were unheard of a few years ago and had it not been for the meetings of The American Society of Mechanical Engineers held in December to discuss the advances each year, and the visualization of the former discussions presented each year as commercial units at the Show, the probabilities are that some of the exhibits would not be as indicative of the success of the power industry as there would not have been the opportunity to show quickly and simply "how it works."

Showing how it works is the most trying task of the manufacturer of heavy equipment and the power show solves this problem.

The forty-two million tons of coal each year burned in the power plants of the public utilities in this country must have some approved mechanical means of being turned into power and all of the stoking devices will be shown at the show. The underfeed stokers that burn over 20,000,000 tons a year will be shown with chain grates that are responsible for the consumption of 12,000,000 tons, and in this connection it is interesting to note that of all the coal burned in the public utility field, to-wit: forty-two million tons, that only nine hundred and seventy-three thousand tons are burned by hand fired methods or open grates. This was not true some few years ago.

Mechanical engineering is moving ahead so fast in America that it is never possible to forecast the new devices that will appear within the span of a year. Many manufacturers have taken advantage of the lull of past months to develop new devices and improvements on old ones that will be shown for the first time at the Power Show this year.

The first day of December marks the opening of the Exposition which will remain open for inspections the entire week to December 6th.

Indicative of the wide interest that is shown in this annual event, it is interesting to note that every state in the Union was represented on the visitors' list of those signing at the door last year.

The growth in interest in this field is indicated when we look back and see that there were only 105 exhibitors at the first show but that, at this time with the show for 1930 three months away, already more than four hundred have taken space and are actively planning to make this the best year that the National Power Show has had.

Since the National Power Show will not be held in 1931 this forthcoming Exposition will draw better exhibits and a record attendance of visitors.

Financial News

The information contained in these financial pages is given with the understanding that any statement on the part of this magazine or any of its staff, as to the responsibility or standing of any person, firm or corporation, or as to the value of any property or securities is a mere expression of opinion, given as a matter of service to the readers of PIT AND QUARRY, *for which no responsibility in any way is to attach to this magazine or to any of its staff.*

U. S. Gypsum Co. Has Net Profit of $2,891,700

In spite of the substantial decrease in volume of construction which has occurred this year as compared with 1929, nevertheless, conditions are better in the gypsum industry now than they were a year ago. This fact was brought out in the report of the United States Gypsum Co. and subsidiaries for the six months ended June 30, 1930, which revealed a 24 per cent increase in net profits over the corresponding period of 1929. The improvement which has taken place has been in the matter of prices particularly and in a lowering of costs.

The consolidated net income for the first half of 1930 was $2,891,750 after depreciation, depletion, federal taxes and all other charges, equivalent after dividend requirements on the 7 per cent preferred stock to $2.24 a share earned on 1,170,472 shares of $20 par common stock outstanding at the end of the period. This compares with net income of $2,329,244 in the corresponding period of 1929, or equivalent to $2.70 a share on 765,027 shares of common then outstanding. The issued amount of common stock was increased principally through the sale of additional shares to stockholders.

All through 1929 the gypsum industry was faced with unfavorable conditions within the trade as well as the decline in building activity. Many of the smaller gypsum companies were forced to enter into a price-cutting war in order to keep their plants operating because of the curtailed demand for their products. This warfare obviously brought out a general unsettlement in the gypsum field and although United States Gypsum kept from this price cutting move for some time, it was finally forced to meet the situation by reducing prices. The result was the poor showing made in the first half of 1929.

Although conditions have not been remedied entirely, some of the worst features have been eliminated, and with the return of construction activity, the gypsum industry should fare better.

United States Gypsum closed the first half of this year in an unusually strong financial position, with current assets of $16,550,813 of which nearly $7,000,000 was in cash and government securities, as against current liabilities of $1,621,617. This compares with current assets of $15,545,294 and current liabilities of $4,016,596 on June 30, 1929. Bank loans of $1,600,000 existing as of June 30, 1929, were liquidated during the last year. Profit and loss surplus amounted to $33,075,806 as of June 30, 1930, as against $28,832,153 as of a year ago.

Commenting on the outlook, Sewell L. Avery, president of the company, in his letter to stockholders accompanying the company's first half report, states:

"While indications point to a further decline in building, reasonably satisfactory earnings seem probable for the remainder of the year. The newly constructed gypsum plants recently placed in operation, while faced with restricted tonnage, are performing satisfactorily."

A comparison of the consolidated income account follows:

Consolidated Income Account

Six months ended June 30—

	1930	1929
Net earnings .	$ 4,343,104	$ 3,258,662
Depr. and depl.	1,055,152	666,363
Federal taxes.	396,201	203,056
Net income ..	2,891,750	2,329,244
Pref. dividend	269,210	264,503
Com. divids...	928,709	610,566
Sur. for period	2,391,041	1,638,879
Prev. surplus .	30,684,764	27,193,274
Surp. at end of per. (P&L)	33,075,806	28,832,153
*Earn. on com.	$2.24	$2.70

*Based on 1,170,472 shares in 1930 and 765,027 shares in 1929.

Postponement of Interest Planned by Bondholders

At a further adjourned meeting of general mortgage bondholders of the Asbestos Corp., Ltd., to be held on Aug. 28, there appears to be an excellent possibility of obtaining the 65 per cent of representation required for action on the request the management has made for permission to postpone interest and sinking fund payments temporarily. At the meeting a few days ago more than 55 per cent of the outstanding general mortgage issue was represented, compared with only 35 per cent at the meeting previous.

As a result of the efforts of the bondholders protective committee, it is probable that two well known engineers will start work on a survey of the company's property later this month. They will study the possibilities and make recommendations as to the future policy of the management in development work.

Texas Gulf Sulphur Is Valued at $41,270,000

The Wharton, Texas, County Board of Equalization has fixed a valuation of $41,270,000 on the properties of the Texas Gulf Sulphur Co. at Boling. As it is the custom of the county to assess taxes on the basis of one-third of the value, the Texas Gulf Sulphur Co. will pay taxes on $13,756,666. In arriving at the valuation of the property, the Board of Equalization valued the leases of the company at $10,000,000; improvements, $5,000,000; royalties. $8,000,000; sulphur in place, $12,150,000, and sulphur on top of the ground at $6,120,000.

CURRENT DIVIDENDS

COMPANY	CLASS OF STOCK	DIVIDEND RATE	HOLDERS OF RECORD	PAYABLE
Alpha Portland Cement	Preferred	1¾% qr.	Sept. 1	Sept. 15
Canada Cement	Preferred	1¾% qr.	Aug. 28	Sept. 30
Canada Paving and Supply	1st Pfd.	1¾% qr.	Aug. 15	Sept. 1
Cleveland Stone Quarries	Common	$.75 qr.	Aug. 15	Sept. 1
Cleveland Builders Supply	Common	$.50 qr.	Sept. 15	Oct. 1
Consolidated Sand and Gravel	Preferred	1¾% qr.	July 30	Aug. 15
Consumers Co	Pr. Pfd.	$1.50 qr.	Sept. 15	Oct. 1
General Asphalt	Common	$1.00 qr.	Aug. 28	Sept. 15
General Refractories	Common	$.75 qr.	Aug. 12	Aug. 26
Indiana Limestone	Preferred	1¾% qr.	Aug. 20	Sept. 1
International Cement	Common	$1.00 qr.	Sept. 11	Sept. 30
International Salt	Common	$2.00	Sept. 16	Oct. 1
Johns Manville	Preferred	$1.75 qr.	Sept. 11	Oct. 1
Johns Manville	Common	$.75 qr.	Sept. 25	Oct. 15
Kentucky Rock Asphalt	Preferred	1¾% qr.	Aug. 15	Sept. 3
Lawrence Portland Cement	.....	1% qr.	Aug. 31	Sept. 15
Material Service Corp.	.....	$.50 qr.	Aug. 15	Sept. 1
Metropolitan Paving Brick	Common	$.50 qr.	Aug. 15	Sept. 1
National Brick of Laprairie	Preferred	$.75 qr.	Aug. 31	Sept. 15
Newaygo Portland Cement	Preferred	$1.75 qr.	Sept. 26	Sept. 30
New York Trap Rock	Preferred	$1.75 qr.	Sept. 20	Oct. 1
Peerless Cement	Preferred	$1.75 qr.	Sept. 20	Sept. 30
Raybestos-Manhattan	Common	$.65	Sept. 2	Sept. 15
Standard Paving and Materials, Ltd.	Preferred	1¾% qr.	Aug. 2	Aug. 15
Standard Paving and Materials, Ltd.	Common	$.50 qr.	Aug. 2	Aug. 15
Superior Portland Cement	Class A	$27½ M	Aug. 23	Sept. 1
Texas Gulf Sulphur	.....	$1.00 qr.	Sept. 3	Sept. 15
United States Gypsum	Preferred	$1.75 qr.	Sept. 15	Sept. 30
United States Gypsum	Common	$.40 qr.	Sept. 15	Sept. 30
Virginia-Carolina Chemical	Pr. Pfd.	1¾% qr.	Aug. 17	Sept. 1
Wolverine Portland Cement	.....	$.15 qr.	Aug. 5	Aug. 15
Worcester Salt	Preferred	1½% qr.	Aug. 10	Aug. 15

Traffic News and Comment

New Complaints Filed

The following subject has been docketed for consideration by the Illinois Rate Committee. In order to give interested shippers time to record their views, final action will not be taken on proposal until after expiration of 12 days from date of this bulletin. If hearing is desired request therefor should be made on the Chairman C. W. Galligan, 1725 Transportation Bldg., Chicago, Ill., within 12 days from date. Action on proposal will not be limited to the exact scope of the docket, but may include other points of origin or destination or other commodities or recommendations varying from changes suggested if such appear necessary or advisable in disposing of the subject. (Carloads: Rates in cents per 100 lbs. unless otherwise indicated.)

The subject of the docket, No. 3985—Sub. 4, is as follows: "Sand and gravel, C.L., minimum weight marked capacity of car, except when is loaded to full cubical or visible capacity actual weight will apply, from Allison Branch, Ill., to Kincaid, Ill. Present rate—Class. Proposed rate, $1.26 per net ton.

Western Trunk Line Committee Docket 7357 relates to a request for a new basis of freight rates on sand and gravel coated with oil, asphalt or tar moving within the State of Nebraska.

Shippers have asked that the new rates be made a differential of 20 cents per ton over the existing common sand and gravel scales.

Shippers have asked the Belfast & Moosehead Lake R. R. to publish a mileage scale of rates on sand and gravel mixed with oil, tar or asphalt for application between all stations on its line. The rates are sought to take the place of the present sixth class rates and are said to be comparable with existing coated stone rates.

The scale, as announced in New England Freight Association Docket is shown below.

Under 20 miles	$ .80
Over 20 miles and not over 40 miles	.90
Over 40 miles and not over 60 miles	1.00
Over 60 miles and not over 80 miles	1.10
Over 80 miles and not over 100 miles	1.20
Over 100 miles and not over 125 miles	1.30
Over 125 miles and not over 150 miles	1.40
Over 150 miles and not over 175 miles	1.50
Over 175 miles and not over 200 miles	1.60

Dockets 25853 and 25854, Central Freight Association.

The carriers have under consideration, the question of making reductions in the proportional rates on cement from Mitchell, Speeds and Limedale, Indiana, to Mississippi River crossings used in making up the through rates to the destination territory lying west of the river.

The present rates from Mitchell to the various crossings range from 15½ cents to 17 cents and it is proposed to make a uniform rate of 13 cents to all crossings. The rate today from Speeds is 15½ cents and from Limedale 13½ cents; it is proposed to reduce the latter rates one cent per 100 pounds.

The railroads have been asked to establish commodity rates on Crushed Stone coated with oil, tar or asphaltum from Jamestown, New York, to various destinations in New York and Pennsylvania.

The subject is covered by Central Freight Association Docket 25778. The following are representative of the rates sought as well as the present rates:

To	Sought Rates per Ton	Present Rates per Ton
Sherman, N. Y.	$1.07	$2.30
Clymer, N. Y.	1.19	2.30
Onoville, N. Y.	1.53	2.90
Emporium, Pa.	1.88	3.50
Erie, Pa.	1.42	2.70
Warren, Pa.	1.42	2.70
Corydon, Pa.	1.42	2.80
Kana, Pa.	1.53	3.10
Centreville, Pa.	1.30	2.60

Carrier Grouping

Considerable comment has been aroused by the apparently successful efforts of the Southern Pacific Group to secure control of the St. Louis Southwestern Railway, familiarly known as the Cotton Belt Route.

If the Interstate Commerce Commission approves the Southern Pacific action that line will, for the first time, have an entrance into the St. Louis market over its own rails.

Under the Commission's tentative plan of grouping the carriers into a small number of groups the Cotton Belt was allocated to the Illinois Central System. Whether the latter will remain passive to the Southern Pacific efforts remains to be seen.

The Baltimore & Ohio interests have virtually secured control of the Chicago & Alton Railroad. This action is in harmony with the Commission's tentative plan and it is expected that little difficulty will be encountered. The Alton has been in receiver's hands for a number of years. It is an important line serving the territory between Chicago, Peoria, St. Louis and Kansas City.

Sand and Gravel

Proposals to change rates, rules or regulations on freight traffic from or to stations in Trunk Line Association territory as below are docketed for recommendation of freight committees.

24371, Sup. 1 (carrier)—**Sand**, C. L. (a) shipped in open-top cars, (b) shipped in boxed cars or closed equipment, minimum weight 90 per cent of marked capacity of car, from Pinewald and Quail Run, N. J., to Clarksburg and Lumberport, W. Va., (a) $3.10, and (b) $3.40 per net ton.

24465 (shipper)—**Gravel and sand** (other than blast, core, engine, fire, foundry, glass, moulding, quartz, silex or silica), C. L., minimum weight 90 per cent of marked capacity of car, from Machias, N. Y., to Red House, N. Y., 80c per net ton. (Present rate 91c per net ton.) Reason: Proposed rate is comparable with rates on like commodities from and to points in the same general territory.

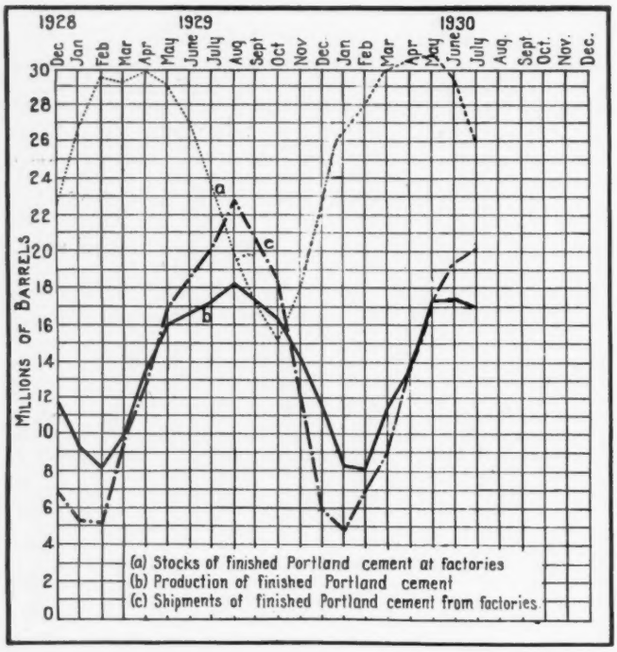
24467 (shipper)—Establish switching rate of $12.50 per car on **crushed stone** from C. H. Ziegenfuss & Co. plant to 12th Street Yard, Union Street Yard, L. V. R. R. team track deliveries at Allentown, Pa. Rate to expire on completion of contracts. Reason: Switching charge is comparable with switching charges now in effect on like commodities at Bethlehem, Pa.

24468 (shipper)—**Slate, crushed, dust, ground, refuse and scrap**, C. L., minimum weight 50,000 lbs., from Fairhaven, Vt., to Castleton, Vt., incl., and Poultney, Vt., to West Pawlet, Vt., incl.—to Spring Lake, N. J., 22c per 100 lbs. (Present rate 28½c per 100 lbs., 6th class.) Reason: Proposed rate is comparable with rate to Asbury Park.

24469 (shipper)—**Sand and gravel** (other than blast, engine, foundry, glass, moulding or silica, C. L.) minimum weight 90 per cent of marked capacity of car, from Lancaster, N. Y., to East Buffalo to Black Rock, N. Y., incl., 40c; to North Tonawanda, N. Y., 65c, and to Niagara Falls and Suspension Bridge, N. Y., 75c per net ton. Connecting lines' switching charges will not be absorbed under these rates. Reason: Proposed rates are comparable with rates from Clarence, N. Y.

24476 (shipper)—**Crushed stone**, C. L., minimum weight 90 per cent of marked capacity of car, from Bethlehem, Pa., to C. N. J. points, Bayway, Westfield, Plainfield, Higginsville, Lebanon, Cary's, Dover, Hibernia, Weldon, Glen Gardner, Vulcanite and various. Rates ranging from 70c to $1.15 per net ton. Reason: Proposed rates are comparable with rates on like commodities for like distances, services and conditions.

Latest Portland-Cement Statistics



Production, shipments, and stocks on hand of Portland cement, by months, December, 1928, to July, 1930.

The Portland-cement industry in July, 1930, produced 17,080,000 bbl., shipped 20,147,000 bbl. from the mills, and had in stock at the end of the month 26,298,000 bbl., according to the United States Bureau of Mines, Department of Commerce. The production of Portland cement in July, 1930, showed a decrease of 1.4 per cent and shipments a decrease of 0.8 per cent, as compared with July, 1929. Portland-cement stocks at the mills were 7.2 per cent higher than a year ago.

The statistics here presented are compiled from reports for July, from all manufacturing plants except three for which estimates have been included in lieu of actual returns.

In the accompanying statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 166 plants at the close of July, 1930, and of 163 plants at the close of July, 1929. In addition to the capacity of the new plants which began operating during the twelve months ended July 31, 1930, the estimates include increased capacity due to extensions and improvements at old plants during the period.

DISTRIBUTION OF CEMENT

Shipped to—	May		June	
	1929	1930	1929	1930
Alabama	172,938	129,594	156,828	124,375
Alaska	1,641	2,068	1,564	2,961
Arizona	57,318	41,429	76,157	41,057
Arkansas	98,331	131,701	149,067	175,644
California	977,113	877,635	981,611	844,399
Colorado	106,513	109,098	105,289	108,405
Connecticut	202,140	211,543	192,236	191,348
Delaware	35,091	38,168	45,544	59,042
District of Columbia	109,581	96,091	110,966	80,561
Florida	105,045	104,418	91,946	89,285
Georgia	121,684	135,715	117,783	142,722
Hawaii	32,262	29,558	22,254	15,182
Idaho	35,169	22,081	31,802	31,356
Illinois	1,583,290	1,038,904	1,780,688	1,212,319
Indiana	474,599	637,605	635,341	820,836
Iowa	579,190	1,067,232	728,393	1,126,961
Kansas	258,378	270,178	229,267	245,344
Kentucky	146,423	122,507	164,656	115,398
Louisiana	121,576	311,868	113,837	306,306
Maine	56,851	79,871	65,594	89,475
Maryland	235,589	331,582	244,635	267,222
Massachusetts	303,692	325,910	293,455	286,925
Michigan	1,192,634	1,022,121	1,486,439	1,164,439
Minnesota	348,850	501,896	456,148	627,906
Mississippi	79,718	44,775	73,548	51,847
Missouri	436,246	734,806	567,722	727,279
Montana	76,909	37,558	82,861	42,649
Nebraska	140,036	164,983	152,570	239,606
Nevada	16,672	15,133	14,091	16,830
New Hampshire	70,122	66,250	73,359	75,978
New Jersey	890,487	712,665	909,551	763,411
New Mexico	28,894	32,693	32,003	30,974
New York	2,130,573	2,032,025	2,493,401	2,331,986
North Carolina	222,453	133,974	179,957	111,543
North Dakota	58,414	43,316	81,746	63,127
Ohio	990,025	1,091,994	1,192,848	1,119,351
Oklahoma	270,643	364,053	286,697	353,241
Oregon	94,249	89,175	95,717	99,177
Pennsylvania	1,296,266	1,559,467	1,467,886	1,793,487
Porto Rico	300	5,265	2,800	250
Rhode Island	80,975	87,710	72,067	75,394
South Carolina	139,561	80,910	126,369	83,713
South Dakota	54,123	51,745	64,846	73,344
Tennessee	248,286	229,121	349,140	284,045
Texas	622,377	583,004	675,511	630,469
Utah	67,602	54,023	59,003	47,872
Vermont	83,862	55,676	130,517	72,329
Virginia	190,663	182,283	187,160	156,599
Washington	208,716	324,551	244,546	347,994
West Virginia	115,718	175,547	153,996	174,962
Wisconsin	633,405	564,324	786,307	751,985
Wyoming	20,364	18,818	27,961	22,374
Unspecified	0	13,660	13,536	5,268
	16,623,557	17,188,277	18,879,216	18,716,552
Foreign countries	82,443	35,723	69,784	64,448
Total shipped from cement plants	16,706,000	17,224,000	18,949,000	18,781,000

IMPORTS OF HYDRAULIC CEMENT BY COUNTRIES AND BY DISTRICTS, IN JUNE, 1930

Imports from—	Districts into which Imported	Barrels	Value
Belgium	Maryland	155	$ 174
	Massachusetts	46,446	58,824
	New Orleans	1,200	1,405
	New York	3,700	8,506
	Porto Rico	3,050	4,074
	Total	54,551	$72,983
Canada	Maine and New Hampshire	8	27
France	New York	213	520
Germany	Los Angeles	312	658
	New York	19	84
	Total	331	742
Japan	Hawaii	253	98
	Grand Total	55,356	$74,370

EXPORTS OF HYDRAULIC CEMENT BY COUNTRIES IN JUNE, 1930

Exported to—	Barrels	Value
Canada	4,216	$19,305
Central America	27,934	47,054
Cuba	4,760	11,268
Other West Indies and Bermuda	5,751	13,602
Mexico	12,380	35,158
South America	22,872	73,207
Other Countries	4,164	24,049
	82,077	$223,639

RELATION OF PRODUCTION TO CAPACITY

	July		June	May	April
	1929 (*per cent*)	1930 (*per cent*)	1930 (*per cent*)	1930 (*per cent*)	1930 (*per cent*)
The month	80.4	77.8	81.4	78.9	64.0
The 12 months ended	68.9	66.1	66.4	66.2	66.0

PRODUCTION, SHIPMENTS, AND STOCKS OF FINISHED PORTLAND CEMENT, BY MONTHS, IN 1929 AND 1930 (*In thousands of barrels*)

Month	Production		Shipments		Stocks at End of Month	
	1929	1930	1929	1930	1929	1930
January	9,881	8,498	5,707	4,955	26,797	27,081
February	8,522	8,162	5,448	7,012	29,870	28,249
March	9,969	11,225	10,113	8,826	29,724	30,648
April	13,750	13,521	13,325	13,340	30,151	30,867
May	16,151	17,249	16,706	17,224	29,624	30,891
June	16,803	17,239	18,949	18,781	27,505	29,364
July	17,315	17,080	20,319	20,147	24,525	26,298
August	18,585	.....	23,052	.....	20,056	.....
September	17,223	.....	19,950	.....	17,325	.....
October	16,731	.....	18,695	.....	15,381	.....
November	14,053	.....	11,222	.....	18,213	.....
December	11,215	.....	5,951	.....	23,550	.....
	170,198	.....	169,437	.....	.....	.....

PRODUCTION AND STOCKS OF CLINKER, BY MONTHS, IN 1929 AND 1930 (*In thousands of barrels*)

Month	Production		Stocks at End of Month		Month	Production		Stocks at End of Month	
	1929	1930	1929	1930		1929	1930	1929	1930
January	12,012	10,504	9,642	9,646	July	15,214	15,069	11,619	11,600
February	11,255	10,008	12,436	11,572	August	15,829	.....	8,995	.....
March	12,450	13,045	14,948	13,503	September	15,165	.....	7,009	.....
April	14,166	15,025	15,479	15,164	October	15,515	.....	5,934	.....
May	15,444	16,607	14,911	14,668	November	14,087	.....	6,134	.....
June	15,312	*a*15,895	13,587	*a*13,452	December	12,539	.....	7,526	.....

PRODUCTION AND STOCKS OF CLINKER, BY DISTRICTS, IN JULY, 1929 AND 1930 (*In thousands of barrels*)

District	Production		Stocks at End of Month	
	1929	1930	1929	1930
Eastern Pa., N. J., and Md	3,314	3,211	2,003	1,962
New York and Maine	1,108	1,124	1,014	737
Ohio, Western Pa., and W. Va	1,772	1,667	1,293	1,432
Michigan	1,287	1,138	1,034	1,351
Wis., Ill., Ind. and Ky	1,851	1,854	1,591	1,922
Va., Tenn., Ala. Ga., Fla. and La	1,118	1,152	1,021	928
Eastern Mo., Ia., Minn. and S Dak	1,411	1,606	869	836
W Mo., Nebr., Kans., Okla. and Ark	1,072	1,328	624	351
Texas	652	550	188	286
Colo., Mont., Utah, Wyo. and Idaho	252	243	459	231
California	1,122	891	1,010	1,096
Ore. and Wash	255	305	513	468
Totals	15,214	15,069	11,619	11,600

PRODUCTION, SHIPMENTS, AND STOCKS OF FINISHED PORTLAND CEMENT, BY DISTRICTS, IN JULY, 1929 AND 1930, AND STOCKS IN JUNE, 1930. (*In thousands of barrels*)

District	July						Stocks at End of June *a*
	Production		Shipments		Stocks at End of Month		
	1929	1930	1929	1930	1929	1930	1930
Eastern Pa., N. J., and Md	3,709	3,566	4,171	4,085	5,389	5,994	6,513
New York and Maine	1,366	1,249	1,609	1,524	1,765	1,462	1,737
Ohio, Western Pa., and W. Va	2,139	1,973	2,282	2,358	3,435	3,522	3,908
Michigan	1,432	1,410	1,950	1,604	1,979	2,619	2,812
Wis., Ill., Ind. and Ky	2,354	2,255	2,837	2,916	3,168	3,931	4,591
Va., Tenn., Ala. Ga., Fla. and La	1,250	1,213	1,543	1,327	1,818	1,887	2,001
Eastern Mo., Ia., Minn. and S Dak	1,570	1,832	2,223	2,540	3,092	2,495	3,203
W Mo., Nebr., Kans., Okla. and Ark	1,159	1,405	1,382	1,442	1,269	1,688	1,725
Texas	701	585	666	709	546	564	688
Colo., Mont., Utah, Wyo. and Idaho	322	219	299	270	529	511	562
California	991	1,009	995	946	991	1,143	1,080
Ore. and Wash	322	364	362	426	544	482	544
Totals	17,315	17,080	20,319	20,147	24,525	26,298	29,364

EXPORTS AND IMPORTS OF HYDRAULIC CEMENT, BY MONTHS, IN 1929 AND 1930

Month	Exports				Imports			
	1929		1930		1929		1930	
	Barrels	Value	Barrels	Value	Barrels	Value	Barrels	Value
January	78,639	$283,002	82,387	$293,135	151,302	$177,976	201,609	$207,461
February	58,886	225,590	64,267	217,798	118,930	123,123	114,455	119,717
March	69,079	235,164	117,563	357,896	131,909	112,788	43,622	59,981
April	64,145	218,316	57,419	200,217	89,668	114,281	140,871	178,226
May	57,955	219,366	57,423	198,170	200,646	267,854	94,696	111,998
June	96,055	287,612	82,077	223,639	203,545	228,170	55,356	74,370
July	71,992	247,177	.....	.....	182,098	199,960	.....	.....
August	60,013	225,762	.....	.....	183,938	199,403	.....	.....
September	86,268	308,631	.....	.....	112,372	152,239	.....	.....
October	101,359	337,839	.....	.....	172,566	187,504	.....	.....
November	53,378	198,197	.....	.....	96,568	95,844	.....	.....
December	88,403	297,255	.....	.....	84,358	79,098	.....	.....
Totals	886,172	$3,083,911	.....	.....	1,727,900	$1,938,240	.....	.....

a Revised.

Cement Mill Anticipates Brisk Autumn Business

The International Cement Corp. plant at Irvin, Wash., which has been closed since April, resumed operations Aug. 2. H. M. Heleniak, sales manager, announced the company has sunny prospects for fall business.

Fifty-five men are employed, with the monthly payroll running between $12,000 and $15,000. Aside from the payroll, the company will spend between $20,000 and $25,000 a month in operating expenses. The plant will produce about 1,000 bbl. of cement a day, half its capacity.

"Things look good for us for the fall," Mr. Heleniak said. "Building promises to be active and considerable paving is in sight. Our reports indicate renewed business activity for the near future."

Universal Atlas Builds Dust Collection Plant

The Universal Atlas Cement Co. will soon begin construction of a $1,000,000 dust collecting plant at Buffington, Ind. The dust will be blown through a flue containing ionized plates which will destroy a large percentage of it. The new plant will be completed by next spring, according to J. H. Kempster, general superintendent.

Recent Patents

AMERICAN

Cement and Concrete

Accelerating and improving hydraulic cement. Frederick W. Huber, Riverside, Cal. No. 1,773,001.

Waterproofing cement and composition therefor. Frederick W. Huber, Riverside, Cal. No. 1,772,999.

Crushing and Grinding

Grinding-mill. Clifford O. Bartley, Denver, Colo. No. 1,772,026.

Pulverizer. Gustav H. Kaemmerling, Erie, Pa., assignor to Erie City Iron Works, same place. No. 1,772,048.

Journal for pulverizing-rollers. William Vogel, Highland Park, Ill., assignor to Raymond Bros. Impact Pulverizer Co., Chicago, Ill. No. 1,772,120.

Grinding or pulverizing machine. Silas A. Knowles, Denver, Colo. No. 1,772,150.

Ball mill. Austice A. Wise and George Gates, Oakland, Cal. No. 1,772,737.

Pulverizer. William A. White, Hebburn-on-Tyne, England. No. 1,772,974.

Hammer crusher. William A. Battey, Haverford, Pa., assignor to Pennsylvania Crusher Co., New York, N. Y. No. 1,772,533.

Handling Material

Apparatus for opening cement sacks and dumping the cement into cement-mixers. Doc L. Lewis, Duncan, Okla., assignor to Halliburton Oil Well Cementing Co., same place. No. 1,771,-797.

Machine for handling molding sand. Walter E. Naylor, Chicago, Ill., assignor to Beardsley & Piper Co., same place. No. 1,771,966.

Wagon loader and excavator. Raymond C. Haiss, New York, N. Y., assignor to George Haiss Mfg. Co., same place. No. 1,771,753.

Miscellaneous

Automatic dump for steam shovels. Garfield Thomas, Old Fort, N. C. No. 1,773,066.

Making roads. Frederick W. Huber, Riverside, Cal. No. 1,773,000.

Bucket (scraper). Herman J. Brendlin, New York, N. Y., assignor to Hayward Co., same place. No. 1,772,624.

Excavating-machine. Robert R. Downie, Beaver Falls, Pa., assignor to Keystone Driller Co., same place. No. 1,772,451.

Hoisting-bucket. Ishmael W. Macy, Galion, Ohio, assignor to Galion Iron Works & Mfg. Co., same place. No. 1,772,777.

FOREIGN

Screening

Sorting-screen. Carl C. Larsen, Copenhagen, Denmark. No. 1,771,541.

Blasting

Device for firing shots in drill holes. Société Anonyme des Anciens Etablissements de Hulster, Fabie & Cie and Paul Verdavainne. German 502,166.

Cement

Improvements in the manufacture of Portland cement. Société des Ciments Portland Artificiels de Couzon. French 690,021.

Concrete

Surfacing for concrete floors. F. B. Dehn. British 330,951.

Process for production of reinforced concrete. B. Ruml and F. Ruml. French 689,443.

Installation for pouring concrete. ATG Allgemeine Transportanlagen Gesellschaft. French 689,467.

Concrete bucket. Edward McGivern. Canadian 302,029.

Process for production of watertight concrete. Richard Schubert. German 502,017.

Crushing and Grinding

Roller and other grinding mills. Brinjes & Goodwin, Ltd., C. F. N. Seaman and F. Atherton. British 330,923.

Grinding mills. H. Drysdale. British 330,989.

Grinding and pulverizing machines. V. Booth. British 331,356.

Rotary drum for mixing and disintegrating materials of all kinds. Maschinefabriek I. H. O. R. French 689,626.

Crusher. R. J. Goueille. French 689,675.

Grinding mill. Société Francaise de Constructions Mecaniques (Anciens Etablissements Cail). French 689,921.

Apparatus for pulverizing coal and similar materials. Société Francaise de Constructions Mecaniques (Anciens Etablissements Cail). French 689,-922.

Process and apparatus for pulverizing materials of moderate difficulty. M. Madore. French 690,015.

Improvements in jaw crushers. Etablissements Girard & Fossez. French 690,016.

Hammer mill. Braunschweigische Maschinenbau-Anstalt. German 502,-482.

Swing-hammer pulverizing mill for ore and similar hard materials. Ernst Curt Loesche. German 502,288.

Pulverizing device. Paul Anger. German 501,907.

Colloid mill. Paul Rohland. German 502,484.

Shaking device for mill feed. Westfaelische Stahl-Pflug-Fabrik H. Niemeyer Soehne. German 502,979.

Coal crusher. Nortons (Tividale) Ltd. German 502,980.

Hammer for hammer mills. Maschinenfabrik Buckau R. Wolf Akt.-Ges. German 502,981.

Hammer for hammer mills. Zeitzer Eisengiesserei und Maschinenbau Akt.-Ges. German 502,851.

Pulverizing machine. Ernst Curt Loesche. German 502,852.

Gyratory crusher. Traylor Engineering & Manufacturing Co. Canadian 302,156.

Drilling

Percussive tools. G. G. T. Rayner and P. T. Rayner. British 331,881.

Cone-bit. Arthur Java Simpson. Canadian 302,046.

Blowing device for drills. Flottmann Akt.-Ges. German 502,033.

Frame for coal and rock drills. Jeffrey Manufacturing Co. German 502,327.

Extension drill. Dipl.-Ing. Karl Joh-Bruhn. German 502,546.

Drying

Shaft dryer for granular materials. Dr.-Ing. Paul H. Mueller. German 503,006.

Excavating

Excavating and loading machines. T. D. Denholm. British 330,907 and 330,908.

Mining apparatus. Sullivan Machinery Co. British 331,109.

Coal, mineral and rock-cutting tool-arms, for use in combination with electric, compressed air and like motors. G. T. Jones and W. Kemp. British 331,355, and 331,356.

Apparatus for excavating and conveying overburden in open-pit work. ATG Allgemeine Transportanlagen Gesellschaft m.b.H. German 502,034.

Firing

Feeding device for pulverized coal firing. Carbo-Union Industrie Maatschaapij. German 501,941.

Gypsum

Gypsum fireproofing blocks. F. S. Bridges. British 331,001.

Process and apparatuts for the manufactutre of board and similar objects of plastic materials, particularly from gypsum. Etablissements Cantillana. French 689,789.

Kilns

Tunnel kilns. Woodall-Duckham (1920) Ltd. and A. McD. Duckham. British 331,109.

Kilns. H. M. Robertson. British 331,224 and 331,225.

Shaft kiln of several shafts on the same axis, for burning gypsum. Arthur Anker. German 502,871.

PIT AND QUARRY will furnish, at its actual cost, a copy of any patent cited above. A charge of ten cents per copy is made by the U. S. Patent Office, Washington, D. C., and readers may procure a copy directly by addressing the Commissioner of Patents, with payment for copies requested. Postage stamps are not accepted by the Patent office. We will endeavor to obtain copies of foreign patents for our readers but we cannot give assurance in every case for the reason that copies of such patents are not printed for distribution as liberally as are the American copies, nor is there a fixed charge per copy.

Legal Information for Operators

Owner Must be Notified at Time Lien is Filed

A common place question is: Can a contractor sue the owner and recover the contract price for labor and material furnished such owner by a sub-contractor, or materialman; and, if so, under what circumstances?

Generally speaking, a materialman, principal contractor or sub-contractor is not entitled to a mechanic's lien unless he gives legal notice to the owner of the claim. In the event the notice is given the owner, either by the contractor or the sub-contractor or materialman, then it becomes the duty of the owner to retain from the money thus due the principal contractor a sum not exceeding the price contracted for, and in such event, the materialman or sub-contractor may maintain an action against the owner personally, even though the action to enforce the lien was not commenced within the prescribed statutory period.

Also, it is established that where neither the principal contractor nor the sub-contractor furnishes the owner with an itemized statement or notice of the materials furnished and labor performed by the sub-contractor, the contractor can sue the owner and recover the contract price for the labor and materials furnished the owner by the sub-contractor.

For instance, in Grier-Lowrance Const. Co. v. Winston-Salem Journal Co., 151 S. E. 631, a principal contractor and an owner entered into a building contract. The principal contractor sublet a portion of the work to a sub-contractor. Neither the principal contractor nor the sub-contractor sent notice or a statement to the owner for the work performed by the sub-contractor. Later the principal contractor filed a mechanic's lien, including the amount due the sub-contractor. In holding the lien valid, the Court said:

"The question arises: What constitutes such notice as will confer upon the sub-contractor or materialman the right to maintain a suit in his own name? . . . . The decisions, in substance, require that the notice or itemized statement must be 'filed in detail, specifying the materials furnished or labor performed and the time thereof.' Such notice or itemized statement must show substantial compliance with the statute. However, if it is an entire contract for a gross sum, the particularity otherwise required is not essential. . . . There is no evidence in the record, as we interpret it, tending to show that any itemized statement or notice was ever furnished to the owner by either the contractor or the sub-contractor or materialman. Indeed, the sub-contractor or materialman was asserting his claim exclusively against the contractor. Under these circumstances, we are of the opinion, and so hold, that the plaintiff (principal contractor) can maintain the action."

Sub-contractor Refuses to Fulfill Obligations

In Frederick Co. v. Murphy, 147 Atl. 710, a general contractor, believing that he would obtain a contract to construct a building, made a contract with a sub-contractor to perform work. The general contractor was successful in obtaining the contract. However, for some reason, the subcontractor refused to fulfill his obligations. The principal contractor sued the sub-contractor who contended that the contract was void and unenforceable because the owner had not awarded the contract to the principal contractor when the sub-contract was made. The higher Court held the subcontractor liable in damages for breaching the contract, and said:

"The general rule regarding breaches of contract, whether relating to real or personal estate, is that the injured party shall recover that compensation which will leave him as well off as he would have been had the contract been fully performed. . . . The defendant (sub-contractor) had no right to withdraw from his agreement after the plaintiff (principal contractor) had accepted his bid, though the contract had not yet been awarded."

Property Owners Liable for Injury to Children

It is well settled that an adult trespasser is not entitled to damages for an injury not willfully inflicted by the owner of the property. However, the situation is different with respect to children, because any person who maintains a dangerous appliance, or hazardous premises, likely to attract children is expected by the law to exercise ordinary care to prevent injuries to them.

For instance, in Arrington v. Murphy, 149 S. E. 549, it was disclosed that a person rented a camp adjoining a gravel pit. The children of the former were injured and the father filed suit for damages. It was argued that since there was no path between the father's lot and the gravel pit, the children were trespassers and, therefore, not entitled to damages for the injuries. Nevertheless, the Court held the father of the injured children entitled to damages, saying:

"The defendant was charged with notice that these children were only 11 steps away. While there was no pathway or walkway at the place, still these children, doubtless attracted by the machinery and sand pit, could not be reasonably held as trespassers, in a legal sense, because they came up to the bank out of curiosity and peeped over into the sand pit."

Group Freight Rate is Parity to Competitors

Generally speaking, the principle of the absorption of switching charges is universally recognized as necessary to place on the same rate parity all individuals, firms and industries located within the defined limits of a switching terminal, thereby permitting traffic to move to all points without burdening any shipper with any disadvantage on account of the location of his plant within the limits of the switching terminal.

For illustration, in Zenith Sand Co. v. Public Service Commission, 151 S. E. 433, it was shown that the Zenith Sand Co. ships sand and gravel from a plant located near St. Albans, W. Va. Certain of its competitors have plants located within the Charleston terminal district of the C. & O. All industries within that district are charged with outgoing freight over the C. & O. from its passenger station at Charleston, no matter the distance therefrom (within the district) where the freight originated. In rate language the switching charges are "absorbed" by the C. & O. As St. Albans is eleven miles west of the C. & O. passenger station at Charleston, the Zenith Sand Co. necessarily pays a higher rate on freight going east than is paid on like shipments from Charleston. The plants of other sand companies in Charleston are located on the New York Central Railroad and are several miles from the C. & O. passenger depot. Under the grouping arrangement referred to, no charge is made by the C. & O. for hauling and having the N. Y. C. haul the competitive freight to the C. & O. main line. The Zenith Sand Co. contended that this arrangement enables its competitors to undersell it to eastern customers, is prejudicial and discriminatory, and that the C. & O. should be required to collect switching charges from the competitors.

The higher Court refused to render its decision in favor of the Zenith Sand Co., saying:

"The Chesapeake and Ohio Railway's absorption tariff makes no distinction between individuals, firms or industries, and it offers no benefit to any one shipper that is not available to all shippers under the same or substantially similar circumstances and conditions."

Insurance Problems Discussed

After the Fire

"It couldn't burn," was asserted; but it did burn.

It was a one-story brick building, with concrete floor, high-composition roof so far from the floor that fire could hardly jump to it, and the contents were entirely incombustible. Yet it was totally destroyed by fire. This fire not only showed me how much damage can be done to incombustible property, but it taught a lot of lessons about insurance.

This plant was underinsured, and the owners had to dig down into their own pockets to get it going again. The lack of sufficient insurance in this case was not at all due to ignorance or carelessness. The president of the company and his broker for years had held a conference every sixty days to see that all the policies were in shape. The first trouble came from the fact that the president did not think a total loss was possible; so he held the insurance to a scant eighty per cent of the value, feeling that he was certain to salvage at least the remaining twenty per cent. So, right at the outset, the owners could not hope to collect more than four-fifths of their loss.

Book Value

For a long time the owner had considered that the machinery was well covered by insurance. The policies on this item totaled up to the full amount of machinery and equipment, as shown on the annual statement. In a way, this coverage seemed high, because the heavier pieces and the foundations for machines were so unlikely to be damaged that some salvage seemed certain. True enough, there was no certified appraisal of the equipment, but an appraisal had always seemed a luxury for a careful management. The insurance, being set according to the value of machinery on the books, was deficient for two reasons. In the first place, machines were originally entered at their purchase price; many had been picked up at genuine bargains, and no adjustment had been made to conform to the normal replacement cost. In the second place, the auditor had been showing a fictitious heavy depreciation to reduce the income tax. Many valuable machines had been "written off the books." As a result, the insurance met only three-fifths of the cost of new machinery.

Different Inventory Results

Although no one enjoys being short of insurance, the machinery situation was, at least, explainable. But the adjustment of the damage to stock and work in process was so perplexing that, to this day, the heads of the firm are still debating as to how they came out. It all seemed simple the day after the fire. The job tickets had not been burned. So the adjuster said to add up the labor and material as shown by these and figure in the overhead. This came to $46,000. Then, to prove the result, the insured was to take the inventory on Dec. 31, 1929, add all 1930 purchases and payrolls and deduct goods shipped out. This ought to agree with the other computation as a measure of the present inventory. But it was actually only $32,000.

How could the same firm get two inventories $14,000 apart? Both figures were erroneous. The count from the job tickets failed because the overhead used was the factor which the firm used for figuring estimates on orders and not the overhead percentage shown by experience. This factor was too big, and made everything inaccurate. The inventory plus additions and shipments was wrong because, in preparing a favorable income-tax return, the auditor had "forgotten" to include in inventory many miscellaneous supplies. Possibly a good tax return, but dishonest. And it cost the firm plenty because the loss was naturally settled on the lower valuation. "What's good enough for Uncle Sam is all right for me," said the adjuster, "and I don't think you would want to admit you lied to the Government even to collect more indemnity."

Honesty in your books and an efficient accounting system will help any firm to collect the maximum insurance in case of loss.

Property of Others

This same fire brought up some typical problems of property on the premises which belonged to others than the insured. The policies covering this firm, like most well-written ones, included "property of others for which the insured is (legally) liable." The question arose, not as to what the other goods were worth, but as to how far the insured was responsible for their safety. One portion of this "property of others" was a large job which had been completed and paid for but not delivered. In a letter concerning this property the owner of it had included the sentence: "I understand that you are carrying fire insurance to cover my goods." This sentence implied a definite agreement and was accepted by the insurance companies as a reasonable basis on which to pay for the goods. Another firm had left some dies on the premises, however, and nothing whatever had been said about insurance. These dies were not paid for, because the insured legally was only compelled to use ordinary care, and the mere fact that loss occurred did not, of itself, create any legal liability.

This matter of property in your possession which belongs to someone else should be very definitely understood. Many firms feel that they are entirely responsible for the safety of such property and must make good the loss no matter how it occurs. Such firms are thinking about the factor of good will, since it may often be necessary to assume a liability voluntarily and pay for any damage in order to keep the business of the owner of the other property. But it would not be practical for an insurance company to attempt to settle such problems of good will and, therefore, it can only pay when there has been a specific agreement or when fire was due to the insured's negligence.

Disagreement with Adjuster

So-called "independent thought" about how to handle a loss adjustment sometimes leads to trouble. If you disagree with the adjuster about the value of your property, it is all right for you to press your claim, and the adjuster will usually "go along with you" in finding a satisfactory compromise or arbitrator. But there was one insured who tried to do his own steering without reading the policy carefully. In the first interview, the insured and the adjuster failed to agree upon the value of damaged property, an experience that is neither unusual nor alarming. After the interview the insured decided he would "sit tight and let the adjuster make the next move," feeling that this would give him an advantage in bargaining power. However, he overlooked the point that the policy puts the burden of proof on the insured. Unless the insured files a claim in writing within sixty days of the fire, the company does not have to do anything about it and need not pay a dollar of the loss. In the case noted above the insured carried the delay so far that he sacrificed all his legal rights and finally was paid only through the courtesy of the insurance company.

Insured Must Prove Claim

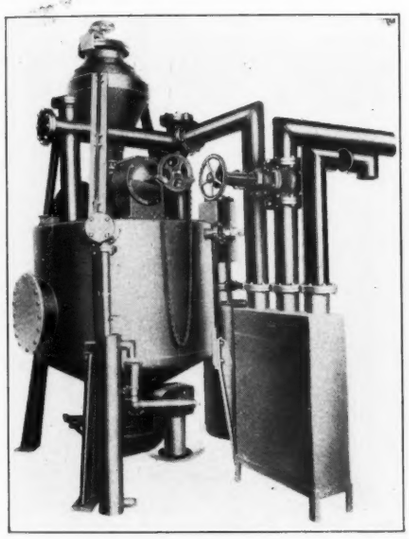
When this loss finally came to the point of settlement, the insured attempted another stratagem that did not work. He put in a claim for a total loss and said it was up to the adjuster to show if any of the property was still fit for use. But the policy says that all affirmative proof must come from the insured, who must disclose the facts about salvage and partial damage as well as the total losses. Then finally, this "independent minded" insured again almost lost his insurance because he wanted to leave the claim open for six months or a year until subsequent use should prove whether certain machines had been injured. There might be some abstract ethical justice behind this point of view, but it is not practical.

New Machinery and Supplies

New Acetylene Generator Improvements on Market

The Oxweld Acetylene Co., New York, N. Y., has placed on the market two improved types of non-automatic stationary acetylene generators for supplying large volumes of acetylene. These generators are each made in two sizes having 500-lb. and 1,000-lb. carbide capacity. They are designed for large industrial plants where oxywelding and cutting are used extensively and where oxygen and acetylene are piped to stations convenient to operators.

The Oxweld Type NA-3 acetylene generator, shown in the illustration, is for plants using low-pressure welding and cutting apparatus and delivers to a storage holder which is weighted to supply acetylene to the shop piping system at a pressure of 20-in. water column.



Acetylene generator of new type.

In operation, the carbide is conveyed from the hopper to the generating chamber by a rotary feed screw driven by a slow-speed reciprocating water motor. The screw, being cast nickel, is very resistant to wear and will not cause sparks.

From the generator the gas enters the wash box where it passes through a water seal which acts as a scrubber to remove any particles of residue which might have been carried over.

The gas holder of suitable size may be located either inside or outside the generator house as best meets the needs of the particular installation. On the holder is mounted an automatic water holder shut-off which stops the carbide feed mechanism. When the gas bell approaches its upper limit, this shut-off must be opened by the attendant before the generator will again produce acetylene.

Except for this one automatic feature, all operations having to do with the starting and stopping of carbide feed must be performed by the generator attendant. For this reason, the generator is classed as non-automatic, that is, the carbide feed is not automatically governed by, or interlocked with, the immediate acetylene requirements.

The Type NA-4 generator is similar to the Type NA-3 with the addition of an Oxweld automatic booster system to deliver acetylene to the shop piping system at pressures not to exceed the permissible limit of 15 lb. per sq. in. The booster system consists of a booster pump, pressure regulating, by-pass valve, pulsation tank, mercury seal, hydraulic back-pressure valve, electric motor for driving the booster, and power-transmission equipment. The booster unit may be had with a capacity suitable for the particular installation.

Ford Motor Announces New Dump-Body Trucks

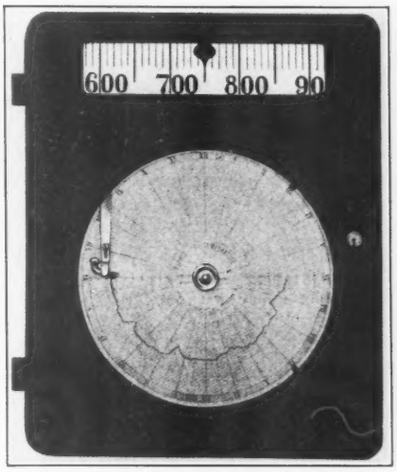
The addition of five dump-body trucks to the line of standard Model AA 1½-ton trucks has been announced by the Ford Motor Co. They offer a wide range as to price, hoisting method and capacity and are designed to meet the requirements of most every kind of hauling in which a body of this type is used.

The Ford dump trucks include an hydraulic dump body with hoist of 1½-tons normal operating capacity; a heavy-duty-hydraulic dump body; a mechanical dump body; gravity dump body; and hand dump body.

Bodies are made of one piece of steel with no center or bottom seams to interfere with the free flow of materials.

New Pyrometer Contains Novel Operating System

A very novel instrument for measuring and recording temperature has been developed recently by the Uehling Instrument Co., 102 Vesper Street, Paterson, N. J. This instrument, which is known as the "Self-Contact" potentiometer pyrometer was primarily designed for measuring high temperatures as experienced in the iron, steel and ceramic industries. It lends itself equally well, however, to the measuring and recording of any temperatures where a high degree of accuracy is desired. Either a thermocouple or an electric resistance bulb may be used as the temperature element.



Recording pyrometer.

The recorder, as illustrated, is actuated by a galvanometer that may be placed in any desired location, quite apart from the recorder. A single galvanometer will actuate as many as four recorders, each recorder in a different location, each measuring a different temperature, and, if desired, each having an entirely different calibration.

Dayton Rubber & Mfg. Co. Offers New Cog V Belt

The Dayton Rubber & Mfg. Co., of Dayton, O., some time since developed a special type of V belt for which certain specific advantages were claimed. Apparently users of this drive who have checked up on the several features, as noted below, bear out the observations of the Dayton Co. with reference to this product which goes under the trade name of the Cog-Belt. This name finds its derivation in a series of tooth-shaped corrugations on the inner surface of the compression section. This cogged surface is not for the transmission of power but provides flexibility and prevents buckling when the belt is flexed around the pulley, thereby causing it to hug rather than resist the pulley arc, and at the same time present an even surface to the sides of the V groove.

The conformation of the inner surface, when flexed upon itself, shows the cogs pushed closer together. This precludes any buckling, while the increased flexibility provides a maximum contact arc and permits smaller pulleys. Less tension is required which eases bearing friction.

Less heat generation and high cooling efficiency through raw edges per-

mit higher speeds and assure longer life.

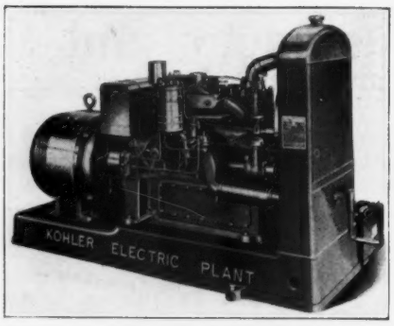
The manufacturer seems to be justified in claiming that operation on shorter centers is possible because of flexibility, gripping power and cool running.

The outer portion of the belt, being under tension when flexed around the pulley, is made so that it can elongate without undue internal strain. It consists of a series of convolute layers of a bias-cut fabric, providing just the right amount of "give." Since the belt is die-cut, not moulded, the ends of the threads in these layers are exposed to the sides of the pulley groove to form a part of the driving surface. Since they are bias-cut, it is impossible for them to ravel, but instead they provide a tough wear-resisting riding surface with a high coefficient of friction.

Electric Plants Enable Pit Operations at Night

Twenty-four hour operation of stone quarries, sand and gravel pits, cement mills and similar plants is made possible by portable Kohler electric plants—automatic four-cylinder engines that supply power to generate an abundance of direct or alternating current for use wherever electricity is desired.

Smooth running and readily portable, these plants render night work practical and safe, by providing electric current in pits and quarries that city power lines do not or cannot reach. They provide powerful floodlights for night shifts and make the 24-hour working day a reality. They generate current at either 110 volt or 220 volt, direct or alternating current, in capacities ranging from 800 watts to 10 kw. Installed singly or in multiple, the plants provide sure, steady current for floodlighting, and for operating motors, pumps, air compressors, lathes, or portable electric tools. Many sand-and-gravel operators have mounted smaller models of the Kohler plants on moving equipment, such as steam shovels and cars. The units are compact and self-contained and may



Kohler direct-connected unit.

be transported over rough country without damage.

The Kohler engine is connected directly to the generator by its extended crankshaft. The large models are of the L-head type and the smaller plants are valve-in-head. The spark is furnished from a high tension magneto. All the moving parts are liberally oversize to assure dependability and to minimize wear. The crankshaft, camshaft, rocker arms and connecting rods are of drop-forged steel, heat treated for strength and hardness. The gears are wide-faced and helical.

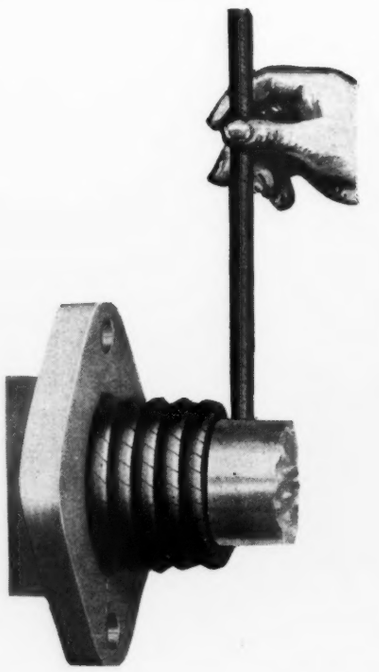
When any electrical device drawing current from this plant is turned on, the plant starts and supplies electricity. It stops automatically when the last electrical appliance is turned off. A remarkable automatic switch controls this action and eliminates the necessity for any large sets of storage batteries, a small battery being required for starting only.

The plants are manufactured in the beautiful industrial village of Kohler, Wis., by the Kohler Co., better known as Kohler of Kohler, which was founded in 1873.

New Type Gland Packing Has Many Advantages

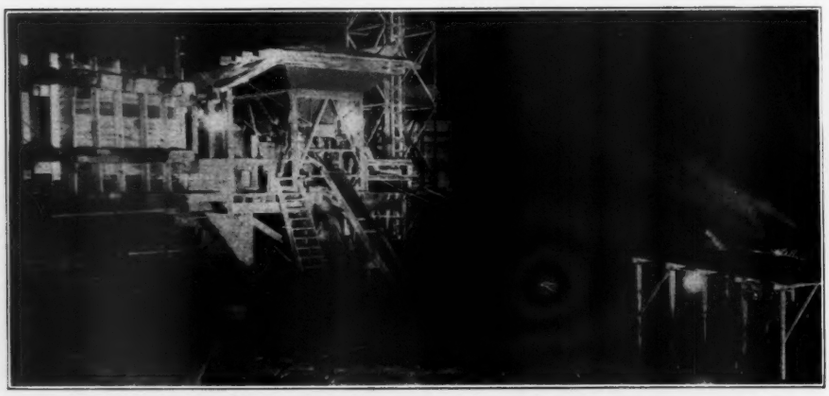
Metalastic, Inc., of Union City, N. J., is putting on the market an entirely new packing called Cordex which is radically different in form and method of manufacture and which has the following properties. It is composed of metal articles, asbestos fiber, binder, and a specially prepared lubricant, neatly encased in a thin shell of viscous material. It is not manufactured in coil form but comes in straight rods, 18 in. long. After the packing is wrapped around the rod, inserted in the stuffing box and the gland drawn up, the casing disrupts and a perfect seal and bearing are created.

This new packing possesses all of the advantages of the loose form of semi-metallic packing plus the additional advantage of easy insertion into the stuffing box. Cordex packing is pressed into rod form of various sizes under high pressure by special hydraulic machinery. It is then wrapped in the viscous material by a special wrapping machine.



This packing is made into straight rods, 16 in. long.

An important advantage possessed by Cordex is that it fits any stuffing box. If desired, the small sizes may be used for packing the larger boxes. You do not need an exact size to pack a particular stuffing box. Thus, although a ¾-in. size of old-type packing might be required to "exactly" fit a given stuffing box, any smaller size of Cordex may be used because Cordex quickly adjusts itself to fit the box, regardless of shape or size. A perfect fit results. Cordex does not harden in the box but is always elastic and furnishes a perfect bearing surface for rods and shafts. It is easily cut with a knife, a pair of snippers or scissors, or anything sharp that is handy. Careful measuring and fitting are unnecessary.

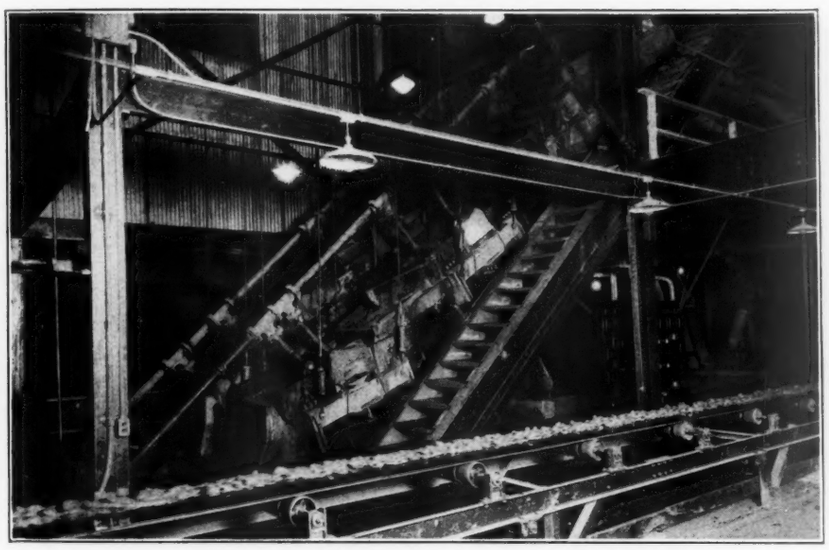


Night illumination of construction job by 5 kw power plant.

Battery of Twelve Screens Prepares Seven Products

Notable among the Traylor Vibrator installations made during the current year is one battery of twelve single-deck screens. The total aggregate fed to these screens averages 400 tons per hr., and peak loads run up to 600 tons per hr. The stone contains a small amount of clay, which is removed by washing the material as it travels over the screens. Each screen has two spray pipes and the total water fed to the battery of screens is 5,000 gal. per min.

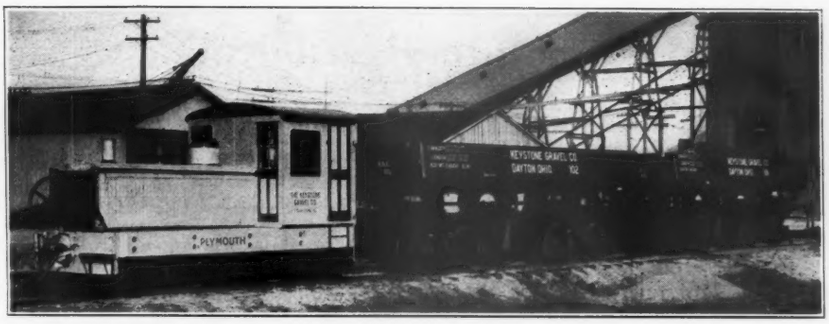
The twelve screens are operated from one motor-generator set. The operator controls the vibration of each machine from the central control board. The operator not only controls the amplitude of vibration of each screen, but he may vary the vibration of the twelve screens by twisting the main rheostat. The electric vibration transmitted to each screen is 3,600 pulsations each minute. It requires but 9 hp. to operate this battery of screens under maximum load.



This battery of 12 vibrating screens prepares several grades of washed sand and gravel.

Each bank of six screens takes its feed by dividing equally the discharge from a 60-in. belt conveyor. The two head screens of each bank of screens are designated as type FB4, and the remaining ten screens are designated as FB2. All screens are equipped with undersize pans and the undersize stone passes directly to the next screen, while the oversize stone is gathered in the V-shaped box and is piped to bins.

The finished sizes are: plus 2-in.; 2-in. to 1½-in.; 1½-in. to 1-in.; 1-in. to ¾-in.; ¾-in. to ½-in.; ½-in. to ⅛-in.; and minus ⅛-in.



Gasoline locomotive at plant of Keystone Gravel Co.

Gasoline Locomotives Work Efficiently Even When Overloaded

In the operations of the Keystone Gravel Co., Dayton, O., a 24-ton Plymouth gasoline locomotive is a prominent unit. In a 10-hr. working day, it hauls 1,500 net tons of gravel, up a 2-per cent grade and around sharp curves. It is used also for switching railway cars about the plant. This locomotive has been in service since 1927 and, according to Edw. Kammer, manager of the company, it has not only proved most satisfactory but has exceeded the claims made by its manufacturer, the Fate-Root-Heath Co., of Plymouth, O.

Two Plymouth 14-ton Model RU locomotives are similarly doing effective service for the New Jersey Sand & Gravel Co., in the pit at Spring Lake, N. J., where each machine hauls trains, each of 7 loaded cars. This company operates also a 20-ton Model HL standard-gauge Plymouth locomotive at its Farmingdale plant and reports that, although it is continually overloaded, working under adverse conditions, and doing switching over wet, sandy tracks which have more curves than straightaway sections, the maintenance has proved entirely satisfactory.

The operation of these units has proven satisfactory on abrupt curves and on grades considered to be as steep as any likely to be encountered in the average yard or quarry.

Loaded trains, New Jersey Sand & Gravel Co.

Truck Builder Opens New Factory in Chicago

Barrett-Cravens Co., manufacturers of Barrett lift-trucks, Steeleg platforms and portable elevators, will move Sept. 1 into its new modern plant at 101 W. 87th Street, Chicago, Ill. This move places this company under the same roof with its two affiliated companies—the Walker Vehicle Co., manufacturers of electric street trucks, and the Automatic Transportation Co., manufacturers of electric lift-trucks and tractors.

Manufacturers' Publications

Each publication listed below contains information of interest to nonmetallic mineral producers. Readers may obtain, without charge—except where a price may be stated—and without obligation, copies of any of these publications by writing directly to the manufacturers who publish them. Please mention PIT AND QUARRY *when writing.*

Abrasives

"What is Meant by Controlled Structure." 3 p., 3 ill. (*Grits and Grinds* July, 1930. Norton Co., Worcester, Mass.) Describes scientific bonding of grinding wheels.

Concrete Pipe Machinery

Quinn Concrete Pipe. 40 p., ill; (Quinn Wire & Iron Works, Boone, Ia.) Describes and illustrates the Quinn Concrete Pipe Machine and equipment. Complete with tables of standard sizes, strength tests, and cost data.

Drills

"Single Shot Loosens 500,000 tons of Granite." 1 p. (*The Armstrong Driller* July-August, 1930. Armstrong Mfg. Co., Waterloo, Ia.) Describes the shot starting the Salt Springs Dam in California.

Driving Machinery

"Link-Belt Patents Promal—a New Metal for Chains." 3 p., 2 ill. (*Link-Belt News* August, 1930. Link-Belt Co., Chicago, Ill.) Describes and illustrates tests and performance of new alloy.

Electrical Devices

Trumbull Cheer. 13 p., ill. (No. 7 for July, 1930, Trumbull Elec. Mfg. Co., Plainville, Conn.) Describes and illustrates electrical control devices.

Explosives

"Denver's Dynamite Road." 2 p., 9 ill. (*Du Pont Magazine* August, 1930. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.) Describes and illustrates use of explosives in a difficult road construction job.

Gas Producers

Wing Blowers. 23 p., ill. Bulletin. (L. J. Wing Mfg. Co., New York, N. Y.) Describes and illustrates methods for improved gas producer operation.

Iron

"Nickel Cast-Iron Data." Bulletins 201-A to 206. (The International Nickel Co., New York, N. Y.) Describes and illustrates technically the use of nickel in cast iron and the advantages obtained with this alloy.

Kilns

"Rotary Kilns and Coolers." 24 p., ill. (Catalogue. Edgar Allen & Co., Ltd., Sheffield, Eng.) Describes and illustrates a full line of rotary kilns and coolers made in the Imperial Steel Works.

Material Handling Machinery

"Mine Uses Automatics to Advantage in Slope Operation." 1 p., 3 ill. (*Car-Sense & Non-Sense* August, 1930. Sanford-Day Iron Works, Inc., Knoxville, Tenn.) Describes and illustrates use of automatic cars in coal mine and increased production resulting therefrom.

"On Jobs Like These." 31 p., ill. Bulletin. (International Harvester Co., Chicago, Ill.) Interesting close up photographs and descriptions of trucks in use at many points in the States.

Material Handling Equipment. 95 p., ill. Catalogue. (The Colonial Iron Works Co., Cleveland, O.) Describes and illustrates a full line of machinery for pits, quarries and cement mills.

Standardized Material Handling Machines. 32 p., ill. Catalogue. (Barber-Greene Co., Aurora, Ill.) Describes and illustrates a line of permanent and mobile conveyors, shovels, loaders, ditchers and other excavating machines.

The Movable V Concrete Body. 12 p., ill. Bulletin 65. (C. O. Bartlett & Snow Co., Cleveland, O.) Describes and illustrates certain types of bodies for auto trucks designed for the transport of ready-mixed cement and quarry products.

Haiss. 80 p., ill. Catalogue 230. (Geo. Haiss Mfg. Co., Inc., New York, N. Y.) Latest catalogue of everything in machinery for the pit and quarry industry.

Safety Devices

Willson Personal Protective Products. 32 p. ill. Catalogue. (Willson Products, Inc., Reading, Pa.) Describes and illustrates a line of goggles, masks and helmets used for protective purposes.

Slacklines

"Feeding Sand to Cement Products Plant" 1 p., 2 ill. (*Sauerman News,* July-August, 1930. Sauerman Bros., Inc., Chicago, Ill.) Describes and illustrates use of slackline as applied to waste pile and enumerates advantages.

Structural Steel

Truscon Buildings. 48 p., ill. Catalogue 220. (Truscon Steel Co., Youngstown, O.) Describes and illustrates everything in steel building construction and accessories.

Welding

"Best for Rotary Kilns." 5 p., 12 ill. (*Oxy-Acetylene Tips,* August, 1930. Linde Air Products Co., New York, N. Y.) Describes and illustrates advantages of oxwelded construction of two 9-ft. by 120-ft. kilns.

"Welding Unbended Plates." 2 p., 2 ill. (*The Fusion News,* August, 1930. Fusion Welding Corp., Chicago, Ill.) Describes and illustrates operating technique of welding unbended plates at low cost.

Production Welding. (Linde Air Products Co., 205 E. 42nd St., New York, N. Y.) Describes and illustrates the application of the oxy-acetylene process as a production method in a number of important industries. It shows clearly the application of procedure control in production operations.

New Corporations

Northwest Chemical Co., Seattle, Wash. J. D. Maxcy, pres.; D. M. Maxcy, sec'y-treas., to develop magnesium sulphate deposits at Oroville, Wash. $2,000.

Midwest Fluorspar Co., 515 First National Bank Bldg., Springfield, Ill. G. D. Lockie, H. H. Tuttle, B. F. Anderson, Abraham Baker. $100,000.

Oklahoma Natural Rock Asphalt Co., 411 Title Guaranty Bldg., St. Louis, Mo. Anna Bart, pres.; H. J. McMahon, vice-pres.; J. E. Swanston, sec'y.-treas. To produce natural rock asphalt. Mines at Ada, Oklahoma. $20,000.

Somerset Crushing Co., 111 Morristown Road, Bernardsville, N. J. Harry W. Hoffman, pres.; Jacob Deutsch, vice-pres.; Michael J. Nervine, sec'y.-treas. To produce trap rock. Quarry at Brook Road, Bernardsville. $250,000.

Chester Valley Lime & Products Co., West Chester, Pa. F. S. Wood, pres.-treas.; A. M. Fitzgerald, ass't. treas.-sec'y.; Chas. A. Spellman, supt. To produce lime products and crushed stone. $400,000 pfd.; 6000 shares com.

East Hempstead Sand & Gravel Corp., New Bridge Ave. and North Jerusalem Rd., Hempstead, Long Island, N. Y. 200 shares com.

Lincoln Sand & Gravel Co., Inc., 141 Dorchester St., Worcester, Mass. John P. Williams, pres.; Thomas F. Williams, treas. 100 shares com.

Forreston Gravel Co., Forreston, Ill. $100,000.

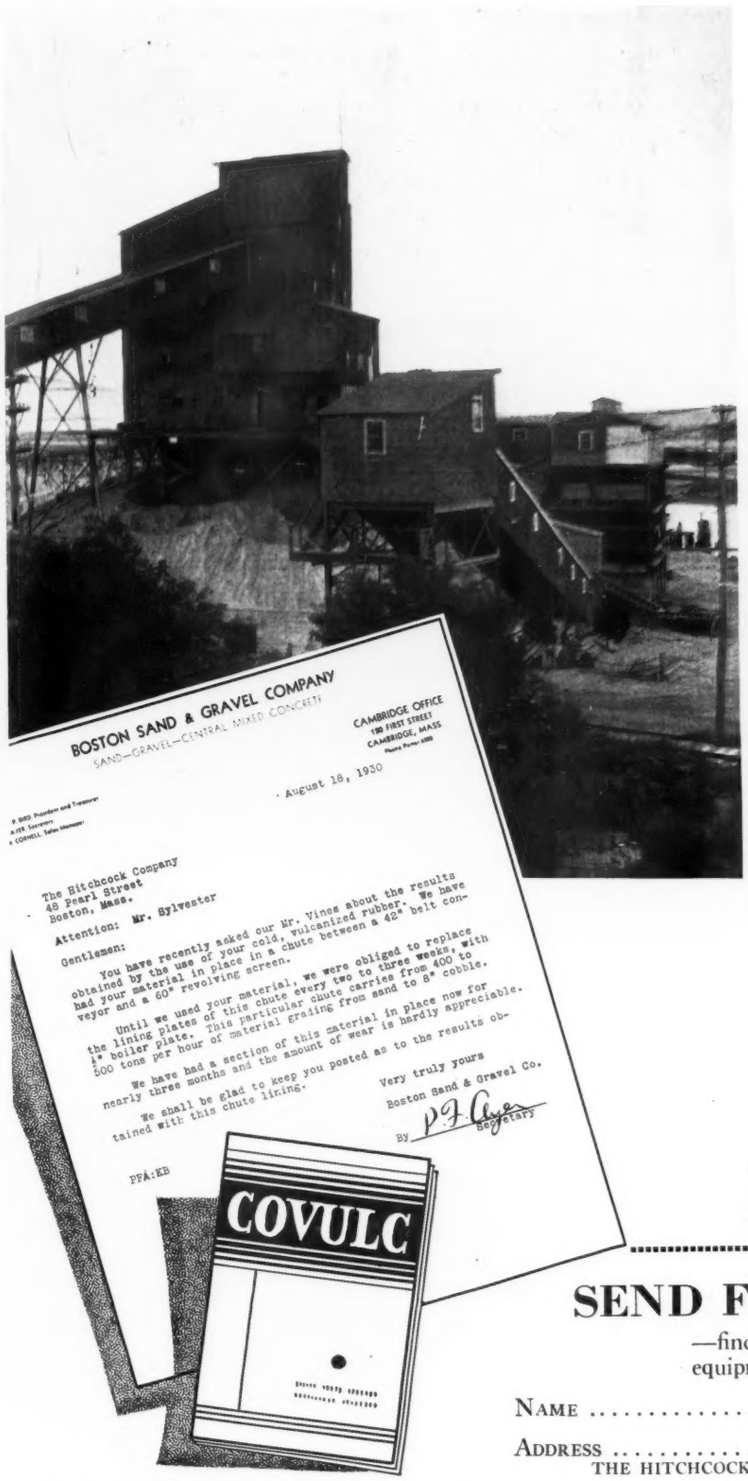
Wayne Sand & Gravel Co., Paterson, N. J. Edward J. O'Byrne. $125,000.

Nicolet Asbestos Mines, Ltd., c/o Greenshields & Greenshields, Transportation Bldg., Montreal, Que., Can. Mines at Danville, Que., Can.

COVULC

TRADE MARK REGISTERED

DOUBLES THE LIFE OF CONVEYOR BELTS


BOSTON SAND & GRAVEL COMPANY
SAND—GRAVEL—CENTRAL MIXED CONCRETE
CAMBRIDGE OFFICE
180 FIRST STREET
CAMBRIDGE, MASS.
August 18, 1930
The Hitchcock Company
48 Pearl Street
Boston, Mass.
Attention: Mr. Sylvester
Gentlemen:
You have recently asked our Mr. Vines about the results obtained by the use of your cold, vulcanized rubber. We have had your material in place in a chute between a 42" belt conveyor and a 60" revolving screen.
Until we used your material, we were obliged to replace the lining plates of this chute every two to three weeks, with ¼" boiler plate. This particular chute carries from 400 to 500 tons per hour of material grading from sand to 8" cobble.
We have had a section of this material in place now for nearly three months and the amount of wear is hardly appreciable.
We shall be glad to keep you posted as to the results obtained with this chute lining.
Very truly yours
Boston Sand & Gravel Co.
By
Secretary
PFA:KB
COVULC

—chutes, hoppers and all conveyor equipment

COVULC will save thousands of dollars for any firm handling sand, gravel, crushed rock, ore or other abrasives. COVULC is an entirely new discovery in rubber chemistry—an inexpensive, self-vulcanizing rubber compound with which worn conveyor belts can be quickly resurfaced as good as new. No heat, pressure or special equipment needed. (Patents pending.)

Quick Repairs — Greater Efficiency — Big Savings

COVULC will outwear steel under abrasion—when used for lining chutes, flumes, hoppers, agitators, mixers, etc., it prolongs the life of such equipment indefinitely—and makes important savings in the purchase of new parts and in maintenance and repair costs. Keeps your plant operating full time, because repairs are quickly made after working hours by your own men.

THE HITCHCOCK COMPANY

48 Pearl Street **BOSTON**

P. Q. 9-30.

SEND FOR THIS BOOKLET

—find out how COVULC can halve equipment and maintenance expenses.

NAME .....

ADDRESS .....

THE HITCHCOCK COMPANY 48 PEARL ST., BOSTON